The Victorian Naturalist

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday, April 14, 1930. Mr. Geo. Coghill (vice-president) occupied the chair, and there were about 110 members and visitors present.

The chairman referred to the recent death of Mrs. St. John, the wife of the president, and members stood in silence as a mark of respect. It was resolved that a letter of condolence be written to Mr. St. John and his family.

CORRESPONDENCE.

From the Hon. the Premier of Victoria re the proposed issue of licenses to trap opossums.

From the Tasmanian Field Naturalists' Club inviting members to attend their Easter Camp Excursion.

From the Victorian Government Tourist Bureau drawing attention to a conducted "Trail Ride" across the Australian Alps during the Easter holidays.

From the Premier's Office, Hobart, Tasmania, notifying that the Thylacine or Marsupial Wolf had been placed on the list of partly protected animals.

From the Australian Association for the Advancement of Science enclosing particulars and circulars re the forthcoming Brisbane meeting.

REPORTS.

Mr. A. L. Scott reported that a pleasant trip with Geology as special object was enjoyed by members and friends on March 29, when the objects of interest so well described by Mr. A. V. G. James (*Proc. Roy. Soc. Vic., Vol.* 32, 1920) and by Mr. C. M. Tattam (*Proc. Roy. Soc., Vic., Vol.* 37, 1925) were visited. The beauty of the Deep Creek Valley in the vicinity of Bulla impressed the visitors and opinions were expressed that a motor trip to that place for birds and flowers might prove profitable.

Mr. A. E. Rodda reported, in the absence of Mr. P. R. H. St. John owing to bereavement. He led a party of 35 members and visitors round the Botanic Gardens in search of birds. Apart from the common introduced kinds only 16 species were noted, two-thirds of which were water birds on the lake. The conservatories were visited and afforded much delight to members and others.

Other reports of excursions were given as follow:—Botanic Gardens, Mr. F. Chapman, A.L.S.; Mt. William Aboriginal

Quarries, Mr. S. R. Mitchell; Clematis Gully, Belgrave, Mr. F. Pitcher.

WELCOME.

The chairman extended a cordial welcome to Miss F. Smith on her return from a trip abroad; also to Mr. Musgrave, of the Australian Museum, Sydney, as a visitor.

ELECTION OF MEMBERS.

The following were duly elected on a show of hands:—As ordinary members: Miss M. Hodgson, Parkdale, and Miss M. Ritchie, South Yarra, and as associate member: Mr. L. Stach, Albert Park.

GENERAL.

Mr. F. Chapman, A.L.S., mentioned that a piece of land at Camberwell known as the Maling Reserve had been presented to the municipality some years ago. The site contained interesting geological features and a permanent spring of water, and was very suitable for a pond and rock garden, but nothing had been done with it. It was resolved that the Club should make representations to the Camberwell City Council and urge the beautification of this reserve.

Miss J. W. Raff, M.Sc., and Mr. E. E. Pescott, F.L.S., were appointed to represent the Club at the Brisbane meeting of Australasian Association for the Advancement of Science to be held in June next.

The honorary secretary drew attention to Mr. J. Searle's gift of four stereoscopes which had been received by the Club.

LECTURE.

Mr. S. Butler gave a lecturette on "Victorian Spiders and Scorpions" (*Arachnida*), and by means of living specimens and a series of excellent lantern slides dealt in an interesting way with their anatomy and habits. He showed that the group so often despised and even feared was a useful one and well worthy of observation and study. A hearty vote of thanks was accorded to Mr. Butler. Mr. Musgrave, of the Australian Museum, Sydney, himself an authority on Spiders, congratulated Mr. Butler, who, he said, was one of the few students of Arachnids in Australia. He made some interesting comments on the recent scare in Sydney caused by Trapdoor Spiders. He also said that the illness caused by the bite of the red-backed spider very rarely had proved fatal.

EXHIBITS.

By Mr. A. C. Nilson.—Living and preserved spiders and doors of trap-door spiders.

Mr. A. E. Rodda.—Living Death's Head Spider and cocoons; also nest of a mud building wasp.

By Mr. Stach.—Fossils from city excavations.

By Mr. F. Pitcher.—Fern fronds collected at the Belgrave excursion.

By National Museum (per Mr. J. A. Kershaw).—A case each of foreign spiders and scorpions.

Master P. Flecker.—Case Moth larvae.

By Mr. S. Butler.—Living spiders in illustration of his lecture.

By Miss A. F. Smith.—(a) Black and white Ringed Snake, *Furina occipitalis;* (b) mud wasps' nests, *Odynerus* sp. *Sceliphron laetus;* (c) Fruit of *Jacaranda mimosifolia;* (d) Nest of trapdoor spider. All collected by the exhibitor in Mildura district.

By Mr. S. R. Mitchell.—(a) Australites from Mulka, east side of Lake Eyre, South Australia, collected by Mr. G. Aiston; (b) Red Pigment and two stone pencils for its application, Rigo, New Guinea; (c) Stone adze heads, Rigo, New Guinea.

By Mr. H. B. Williamson.—(a) Specimens of *Compositae* discussed by exhibitor in April *Naturalist*: *Leptorrhynchus panaetioides, Ixiolaena leptolepis* and *I. tomentosa;* (b) Specimen of *Boronia hispida* Cheel, Rough Boronia, collected by exhibitor at Victoria Ranges, November, 1903, to be added to the Victorian Census.

By Mr. J. C. Goudie.—(a) African Tenebrionid beetle, *Blaps sulcata*, Fabr., recently taken in numbers at Walleroo, South Australia; (b) 21 insects bred from portion of branch of Black Wattle from Berwick, 10 genera, 10 species.

By Mr. A. L. Scott.—Specimens of bee and spider from a flower taken when the spider was grasping the bee by the head.

By Mr. A. M. Wade.—Specimens of processionary caterpillar, collected near Swan Hill.

By Miss J. Maclean.—(a) Miscellaneous collection of local spiders (dried specimens); (b) Living Death's Head Spider, with eight cocoons; (c) cocoon and young of same.

By Mr. A. J. Swaby.—Cosmos, "double" and "single" flowers to show the variation in the disc florets, also stages in pollination; (b) Death's Head Spider with egg cocoons; (c) moth *Pinara* sp. cocoon being spun; (d) *Ophioglossum coriaceum*, sterile frond (pot grown); (e) Maize: abnormal growth of female flowers on male inflorescence; (f) *Viola hederacea* and *Glycine clandestina*, garden grown.

By Mr. C. J. Gabriel.—Marine shells from West Australia: *Cardium lyratum*, Sby.; *C. unedo*, Linn; *Birostra volva*, Linn.

By Mr. Tarlton Rayment.—Drawing of a remarkable bee from West Australia, with exceptionally long maxillary palpi, and very curious processes on the ventral segments of the abdomen.

Other interesting exhibits were on view, notes of which were not received by the honorary secretary.

SOME PLANTS OF THE NORTHERN MALLEE.
Part II.

BY H. B. WILLIAMSON, F.L.S.

Herniaria hirsuta (Tournef.), L. Rupturewort.

This little prostrate greyish-green annual of the family *Caryophyllaceae* somewhat resembling *Chenopodium carinatum*, has apparently spread into Victoria from Murray Lands, South Australia, where it has become naturalized. Mildura, October, 1928. It is a native of the Mediterranean region. Its name *Herniaria* has reference to alleged curative properties of some of the genus.

Mesembrianthemum bicorne, Fam. *Aizoaceae*, Slender Pigface, Cowra Station, West of Mildura, October, 1928.

Apparently established for some years near the homestead. A prostrate plant with slender branches.

Nicotiana glauca, Graham, Tree Tobacco, native to America and naturalized in Victoria in 1869.

This tall shrub with glaucous branches and leaves, and long, tubular yellow flowers, has become a pest in the Northern Mallee and the Riverina, where sometimes hundreds of acres are encumbered with it, to the exclusion of much useful vegetation. It however does not appear to persist indefinitely in a given area. About 10 miles north of Nowingi I passed over an extensive plain which some years before had been thickly covered with the plant, but which was now littered with the dead stems. It was rather interesting to note that these were lying mostly in the same direction. The scene reminded one of patches of rolled-down mallee which had been left for some years without being stacked and burned, and evidently indicated the direction of the strongest winds. No young plants, and in fact no green plants of any kind, were visible among the debris, though here and there on the plain were immense patches—almost pure—of the Bladder Saltbush, *Atriplex vesicarium*. The intruder had probably succumbed to drought conditions, and one could almost imagine the hardy native scornfully gloating over the fate of the daring immigrant.

Nitraria Schoberi, L. Nitre Bush, Fam. *Zygophyllaceae*.

At the locality mentioned above an immense bush of this native plant was seen. It was very dense and measured about 30 feet in diameter and about 10 feet in height at the centre. The plant is usually seen in scattered bushes three or four feet across, and has a local name, "Dillon Bush," which I suspect may include other similar shrubs, e.g., *Chenopodium nitrariaceum*, Branching Goosefoot, and *Lycium australe*, Austral Boxthorn. It bears an edible drupe, golden when ripe, enclosing a pear-shaped, furrowed seed indented at the larger end. The name *Nitraria* has reference to nitre (saltpetre), because it was first known on saline plains in Siberia. It occurs also in Mongolia, Russia and Mesopotamia.

Psoralea eriantha, Bth., Woolly Scurf-pea, Fam. *Leguminosae.*

This plant, hitherto recorded from "Murray," and therefore doubtful for our State, I found in flower growing in profusion on the sandy ground near the river at Mildura. It is an attractive plant, prostrate, softly white-tomentose all over, with purplish flowers crowded in rather short spikes.

Helipterum Stuartianum, Sond. (*H. floribundum*, DC var. *Stuartianum*, Bth.), Flowery Sunray.

Specimens collected at Mildura and Murrayville proved, on examination, to be this species, which Bentham had reduced to a variety of *H. floribundum*. In Black's Flora of South Australia it is, rightly, I think, restored to specific rank. *H. floribundum*, DC, has all involucral bracts snow-white, and is a woolly plant; while *H. Stuartianum*, Sond., has the outer bracts golden brown, and is an almost glabrous plant. Other differences, e.g., greater length of the inner bracts and fewer pappus bristles in of the former, make them quite distinct and easily distinguished from one another. As all the Victorian specimens in the National Herbarium are certainly *H. Stuartianum*, the former name must now be replaced by the latter in our Census.

Pimelea Williamsonii, J. M. Black, Silky Rice-flower, Fam. *Thymeleaceae.*

On visiting the spot where this plant was discovered in 1917, I found that the place had been cleared and cultivated, and was now a sheep run. It has also been found in South Australia at Parilla.

Crinum pedunculatum, R.Br., Murray Lily, Fam. *Amaryllidaceae.*

Doubt as to the occurrence of either of the Crinums on the Victorian side of the Murray River was cleared up by the inspection of a patch of this plant at Horseshoe Lagoon, about 20 miles west of Mildura, in October, 1928. Both this species and *C. flaccidum* (Darling Lily), have been listed on our Census owing perhaps to their frequent appearance in the adjacent Riverina district, and to the fact that they have been in cultivation at Mildura. The plant grows from a bulb and has thick, broad leaves. It flowers in February and March, and produces a cluster of from 5 to 15 large white flowers, larger than those of any other Victorian plant. The bulbs were 2 to 3 inches in diameter, and were difficult to reach in the hard, dry clay a foot or more below the surface. Seeds like small potatoes were numerous on the surface, and many were germinating, some sending the root-tip from the upper surface to curve over and reach the ground into which it was forcing its way. It would be of interest to learn whether any success was attained by members of the club, to whom seeds were distributed in October, 1928.

Beyeria, spp., Fam. *Euphorbiaceae.*

At Murrayville I found the two species *B. opaca,* F. v. M. and *B. Leschenaultii,* DC, Baill., growing in association. Both are viscid shrubs a few feet high and were included by Bentham (*Fl. Aust, VI.,* 65), under *B. opaca,* but they are quite distinct. *B. Leschenaultii* has leaves ½ to 1 in. long, often truncate at the summit, whitish-tomentose below, revolute at the margin, the under surface in var. *rosmarinoides* being almost hidden. In the Southern Wimmera and along the coast the variety *latifolia* is found with leaves ovate to oblanceolate ½-1 in. long. *B. opaca* has leaves quite glabrous below, flat, ⅜-½ in. long, obcuneate, pale green or yellowish below, and olive green above. Both species are included under the local name "Turpentine Bush," a name also applied in the Mallee to *Dodonaea* shrubs. As *B. opaca* has no white at all about it, and has a darker general aspect, the vernacular "Dark Turpentine-bush" is suitable.

Of the two other species recorded for Victoria, *B. lasiocarpa,* F. v. M., Wallaby-bush, a tall shrub with leaves up to 2 inches in length, and capsule densely hirsute is found only in Eastern Victoria.

B. viscosa was recorded from all districts (Census 1923 ed.) on the strength of specimens which must now be placed under *B. Leschenaultii,* and of the specimens from Mt. Mueller, in the North-East, which latter are the true *B. viscosa,* a tree or tall shrub with broad broad-lanceolate to oblanceolate leaves very shining and viscid above, and scarcely recurved at the margin. It is not rare in Tasmania and New South Wales, and grows also in West Australia and Queensland.

Casuarina Muelleriana, Miq., Slatey Sheoke.

On the sand hills 7 miles south of Cowangie on the Murrayville railway, I collected specimens of this sheoke. In Miss Macklin's research on certain Casuarinas (*Trans. Roy. Soc. of S.A.,* Vol. 51), she discussed the "*distyla complex*" and showed that this was one which had been included under *C. distyla.* It is quite easily distinguished even by a small portion of a branchlet, these being rather angular, of a slatey tint, and with the rudimentary leaves closely appressed. In Miss Macklin's paper she dealt with the anatomy of the branchlets as shown by the cross section, and she took C. *Muelleriana* as one type as opposed to the "*stricta*" type, to which latter all of the other Victorian species belong except C. *nana* and C. *suberosa*. The arrangement of the sclerenchyma tissue in these sections indicates the group to which the species can be referred, and in the many sections I have made, the diagnosis seems quite reliable. Two other Casuarinas, C. *nana, Sieb.*, and C. *pusilla*, Macklin, are of a dwarf, almost prostrate habit, and are very similar outwardly; but the former must according to the above, be referred to the *Muelleriana* type, and the latter to the *stricta* type. I have found both among my Victorian specimens.

C. *pusilla*, Macklin, Little Sheoke.

A low cushion-like shrub with thin branchlets resembling those of C. *nana*, Sieb., but, according to the anatomical structure, referable to the "*stricta*" type. It occurs in the N.W. district.

PLANTS IN THE VICINITY OF GYPSUM SIDING.

Here there is an extensive gypsum deposit, and the siding mineral is being taken out to a depth of about 8 feet. The site is near some sand hills, which are probably the eastern continuation of the line of sand hills which one strikes at a distance of from 7 to 10 miles south of and parallel to the Ouyen to Murrayville railway.

Callitris verrucosa, R.Br., Mallee Cypress-pine.

This plant, the "Scrub-pine" of the settlers, is very abundant all along these sand hills. It differs from the plant known as Murray Pine (*C. robusta or C. glauca*) in habit, branching from the ground, forming a shapely bushy shrub rarely more than 10 feet in height. Its cones are globular and evenly covered with round tubercles. When in the hills to the south of Cowangie, I was struck with the remarkable growth of thousands of young plants of this pine a foot or two in height. The majority of them bore cones. I pulled up several which were only 10 inches in height, and had each a ripe cone or two, the root being thicker and much longer than the stem. At Gypsum there is a similar juvenile forest, but apparently somewhat older.

Acacia acanthoclada, F. v. M., Harrow Acacia.

Having only once before (at Hattah, 1913) seen this rare Acacia, I was pleased to find it near the pits and also at Berook, 40 miles north-west of Murrayville. It somewhat resembles *A. vomeriformis* in habit and foliage, and is prickly; but that nature is due to the presence of spiny branchlets instead of pungent phyllodia. It blooms from July and September.

Pultenaea densifolia, F. v. M., Dense-leaf Bush-pea.

Rather frequent around the pits, a low straggling bush with very small recurved leaves set very closely, especially towards the ends of the branchlets near the flower clusters. No more definite locality record for Victoria than "Murray Desert" has hitherto been made. It is now deleted from the list of doubtful plants for Victoria. It occurs also in South Australia.

Calochilus cupreus, Rogers, Copper-beards, Fam. *Orchidaceae*.

Fine specimens of this orchid were gathered where some cultivated land adjoined the gypsum ground. Not previously recorded for the North-West.

Among the rarer plants collected here were *Minuria suaedifolia*, F. v. M., a little bushy composite 3 to 10 inches in height, with yellow flowers; *Dampiera marifolia*, Bth., with blue flowers and broadish leaves; *Logania linifolia*, Schlech. with small white flowers, and *Kunzea pomifera*, F. v. M. in bud; a prostrate plant with Eucalypt-like flowers and bearing berries (Muntries) "yielding excellent jam or preserves" (Mueller).

EXCURSION TO CLEMATIS GULLY.

Members and friends to the number of about twenty took part on March 29 in the excursion to Clematis Gully, about two miles from Belgrave. The walk in the cool, clear morning to the gully along the road, with its fine forest vegetation on our left all the way, was greatly enjoyed, notwithstanding the necessity for alertness in avoiding the frequent motor traffic. Crowds of people were picnicking in the reserve adjacent to the gully, which to some of us had not been improved by the increase of traffic since our last Club excursion in 1927. We looked in vain for the Lilly Pilly tree (*Eugenia*), which was planted to commemorate our previous visit, and then took one of the tracks leading into the gully. After a chat about ferns, the object of the excursion, a list of the twenty-two species collected on the last visit was handed to each of the party, so that a comparison could be made, and the list checked by the specimens obtained. These were collected by the party under a permit from the Forests Department, and were examined and explained. After lunch, and a further search, it was decided to accept the offer of Dr. Clendinnen, and visit his country home garden, which almost adjoins Clematis Gully. Here the members walked round the grounds, and noted many Australian and exotic trees and shrubs growing most luxuriously. The Silver Tree of South Africa, *Leucadendron argenteum*, seen here and elsewhere on our journey, were very much admired. The party then proceeded to Sherbrooke Gully, and thence back to Belgrave, and a few more ferns were added to the collection. Altogether nineteen species were collected, all of which were on the 1927 list.

F. PITCHER.

JUNE MEETING OF THE CLUB.

This will be held on the 2nd instead of the 9th of the month.

STUDIES IN AUSTRALIAN BEES.

By Tarlton Rayment.

THE BATTLE OF THE SEXES.

History.—Since the year 1853, naturalists in Australia, and specialists overseas, have been seeking vainly for the large male bees of the genus *Stenotritus*, which was erected by Smith (1) when he was working on some honey-gatherers, from the antipodes, in the collection of the British Museum. He named the genotype *S. elegans*.

In 1868, this London entomologist (2) described a fine, large green female, *S. smaragdinus*, and in 1873 Brenchly (3) published a coloured figure of this handsome bee. That is the last record of the British workers, and it left the position of these insects in anything but a satisfactory state. Smith's specimens were in bad condition, and the tongues were missing; he had no details of their biology, but he included them in the Family of the short pointed-tongue ANDRENIDAE. He did, however, note the extraordinary spurs of the middle and hind legs, but I shall refer to these later.

Nothing more was heard of these bees until the fateful war year, 1914, when Professor Cockerell (4), of the University, Boulder, Colorado, U.S. America, published a description of *S. elegans*, var A. The American systematist continued to receive large numbers of bees from Australia, and in 1920 (5) he described yet another female, *S. elegantior*.

Henry Hacker (6), in his "Catalogue of Australian Bees," listed this genus under the Sub-family HALICTINAE, but this author could not be held accountable for this erroneous inclusion of the bees, because Smith himself did not classify them correctly, owing, no doubt, to his not having both sexes, neither did he possess a perfect specimen for critical examination.

The murky clouds that partially obscured the genera reviewed in this paper proved an intriguing atmosphere, for I was not content to accept this foggy state for an indefinite period. I carried the problem about with me; my sub-conscious mind was quietly marshalling the facts into logical sequences, until, at the conclusion, I had a clear mental picture of what the males should be. This subtle process of mental digestion and elimination frequently evolves a sudden and striking solution that is often times ascribed to intuition.

But I shall have to leave, for a moment, these fine large honey-gatherers, to direct your attention to another genus parallel with the one under revision. *Aestropsis*, or *Gastropsis*, as it now is, was erected by Smith (2) in 1868, and it is analogous to *Stenotritus* in so far as it, too, was based on one sex; this time the male. Hacker's catalogue, then, contained these two genera, one exclusively female, the other limited to males. Hacker's inclusion of *Gastropsis* in the Family ANTHOPHORIDAE was probably due to a superficial resemblance to bees of the genus *Anthophora.*

Once again, I say, Smith found himself with only one sex, but this time he wrote in greater detail. This author's descriptions are frequently far too meagre, and he often omitted characters that are invaluable when one is making a critical examination, so that several species will be found to conform to one account.

Whatever criticism can be levelled against Smith's usual paucity of words, will have no application to his generic diagnosis of *Gastropsis;* it is both clear and concise. Permit me to quote the portions necessary for the present purpose. The antennae clavate, with the scape short and stout, one-third shorter than the third joint, which is much attenuated. The paraglossae are somewhat pear-shaped and pubescent. The recurrent nervures are received in the middle of the second and third submarginal cells. (The systematist of to-day prefers *cubital* cells.)

Let us leave the "dry bones" to return to our history, and sooner or later we shall reach a more interesting period, when things long established will be swept aside that a more stable state prevail. The climax, I promise you, will be well worth your plodding on a little further.

The genotype of Smith (2) was *G. pubescens,* a hairy male of no mean beauty. Professor Cockerell (7), for the second time, followed on, and described *G. victoriae,* and in 1912 (8) variety A. Later, in 1921, he again worked on this genus, and gave us *C. victoriae rufocollaris* (9). So you see, we then had two genera, each containing three species and a variety.

Professor Friese (10) published in 1924 a description of a new variety *G. pubescens* var. *nigrescens,* and he also mentions another variety, from Adelaide, with a shimmering blue abdomen. This entomologist says these bees resemble the European honey-harvesters, *Meliturga clavicornis,* Latr., but does not specify the points of likeness.

Professor Cockerell (7 and 14) had already stated that these bees had some resemblance to *Meliturga,* but he felt some diffidence about erecting a new genus with *G. victoriae* for the genotype. "It is much to be desired," he said, "that we learn something about the habits of *Gastropsis.*" However, he affirmed that the position of the genus has been in doubt, "but it certainly belongs to the Sub-family DIPHAGLOSSINAE."

THE PROBLEM.—You will now observe that in these two genera we had a fine problem bequeathed to us by workers overseas. Any puzzle in nature must always prove an enticing subject for the naturalist, and when one is spurred forward by a friendly challenge, why, the solution becomes one of intensely absorbing interest.

Professor Cockerell (11), my esteemed mentor in the science of taxonomy, voices his desires thus:—"If I may express a personal wish in relation to Australian bees, it is that I may live to see some young student, man or woman, take up the study in Australia, and have sufficient perseverance and skill to carry it beyond the present stage. Indeed, why should there not be half a dozen such students? In that case it would no longer be necessary to send collections across the ocean for determination, and Australia would have the satisfaction of mastering her own problems in this field, as she has done in so many others."

THE SOLUTION.—Very well, I am no longer young, alas, but I take up that gage in the spirit that prompted it, and solve at least one problem, an entomological legacy from abroad. The females of *Gastropsis* will never be described as such, neither will the males of *Stenotritus*, for they are merely the sexes of one genus. All the species mentioned are merged in the genus *Melitribus*.

When your fellow-clubman, Tom Greaves, returned from a visit to the great western State, he brought back a fine collection of bees, among which was a large black male of striking stature. At a glance I know it is a suitable mate for the bees so long condemned to taxonomic celibacy. I am determined to direct some light into a dark place. I erected the genus *Melitribus* (12) because the other two genera were so ill-founded, and further material from the Perth Museum, the West Australian Agricultural Department, and my own observations in the field, prove my action to be the correct one.

COMPARATIVE ANATOMY.—These bees are most certainly within the Family Colletidae, the tongue being short and wide, and, therefore, typical of all bees that construct thin, silvery skins as cradle-gowns for their young. The wide heads of the females are characteristic, but the ocelli are low down on the face, and the anterior edge of the clypeus is knife-like, and hides the lip or labrum; all these being features of the *Meliturga*, which has a very short third segment in the antenna. There the likeness to the long-tongued European bee ceases. The tibiae of *Meliturga* are spinose like those of *Megachile* and *Euryglossa*.

Melitribus has the digging spurs of the queen of excavators, not only is the huge hind calcar strongly toothed, but the median one also exhibits her unique ability to delve deeply in mother earth. In the fleece of *M. glauerti* I find innumerable small pebbles, remnants of the sandy Yorkrakine soil; her native heath. On her belly are dense bands of harvesting hairs, and the apical segment of her abdomen has the bare naked area which, Smith (1) says, is a character of *Lamprocolletes.*

The males have the face constricted, and an abnormal development of the compound eyes. Cheshire (13) says that the holoptic eyes of the hive-drone have forced the small eyes down the face, but the ocelli of *Melitribus* females are low, yet the vertex is not narrowed in any way. The male's spurs are finely serrated like those of *Meliturga,* but bees having this type of calcar are like tradesmen with combs and, therefore, are not equipped for delving, whereas real excavators have strong picks and shovels. The tarsal joints of *Meliturga* and *Melitribus* are not unlike, but the former bee has only nine wing-hooklets, and radius is extended to a short appendiculate nervure. The second recurrent nervure of *Melitribus* has a sharp wave-like bend. The eyes of *Apis,* the hive-bee, have long sensory hairs between the cornules, a feature found also in *Trichocolletes* and *Meliturga; Melitribus* has only short, stout pegs. The hairs from the leg of the last named bee are of the forked type of all Colletid bees, whereas the pubescence of *Meliturga* is finely plumose, like that of the hive-bee, *Apis.*

BIOLOGY.—The life history is not unlike that of many other Colletid bees; the females being diggers *par excellence.* The shafts are several feet deep, in light, sandy, flat ground, and the walls do not appear to have received the slightest treatment, so that one wonders why the loose soil does not collapse. The large ovate chambers at the bottom have the thin skin lining of Colletes, and the stores are a soft batter of honey and pollen. The males and females issue in early summer, and they are reported to frequent Tea-tree, *Leptospermum,* and Bottle-brush, *Callistemon.* In West Australia they have been taken at the end of October on the small yellow blossoms of the "Morrison-flower," *Verticordia nitens.*

The following synopsis, together with the illustration, will enable students to separate easily the species that have long been an enigma to all lovers of the honey-tribes.

KEY TO SPECIES.

Female, length 18.5 mm.—Bright green, not shining; antennae black; sterna with white hair; a fringe of white hair on apical margins of abdominal segments.

Hab.: Champion Bay, W.A. *M. smaragdinus* (SMITH)

Female, length 21 mm.—Peacock-green, with peacock-blue about the head, shining iridescence; antennae with thick basal joint royal-blue; sterna with grey hair; no fringe on abdominal dorsal segments.

Hab: Yorkrakine, W. A. *M. glauerti*, new species.

Female, length 16 mm.—Purple and green tints on head; scape of antennae bright ferruginous; abdomen steel-blue, with white hair-bands; fifth segment with a patch of red hair in a dark fringe.

Hab: Queensland. *M. elegantior* (COCKERELL)

Female, length 13 mm.—Head and thorax black; face and cheeks with ochreous hair; abdomen dark olive-green, the apical segment with a fimbria of bright fulvous hair.

Hab: Sydney, N.S.W. *M. elegans* (SMITH)

Female, length 13 mm.—Mesothorax with olive-green tints anteriorly; no fuscous hair on disc; abdomen with black hair.

Hab: Sydney, N.S.W. *M. elegans*, var. A. (COCKERELL)

Male, length 16 mm.—Black, shining, face with orange-coloured hair; legs all black; abdomen with hind margins of segments narrowly lighter; the first and second segments covered with much white hair.

Hab: Bungulla, W.A. *M. greavesi*, RAYMENT.

Male, length 15½ mm.—Face with long yellow hair; thorax with yellowish-white hair; abdomen with hind margins of segments not lighter, and no narrow hair-bands; some reddish colour on anterior tibiae.

Hab: W.A. *M. victoriae*, var. A. (COCKERELL)

Male, length 14 mm.—Abdomen and anterior part of mesothorax with a greenish lustre; mesothorax with yellowish hair on anterior third; abdominal segments 3-5 with narrow hair-bands.

Hab: W.A. *M. victoriae* (COCKERELL)

Male, length 14 mm.—Face with much dull white hair, a narrow band of dull white hair on anterior of mesothorax, disc with much black hair; abdominal segments 1 and 2 with scanty white hair; four narrow white hair-bands on abdomen; anterior legs red in front; general aspect that of a small *M. greavesi*, but tegument not so intensely black.

Hab: Swan River, W.A., L. J. NEWMAN.
M. victoriae, var B, var. nov.

Male, length 14 mm.—Face with bright ferruginous hair; eyes greenish; first three segments of flagellum clear ferruginous; mesothorax metallic, with bright red hair on anterior third; abdominal segments 2-3 with hair-bands failing in the middle.

Hab: Mallee, Vic. *M. victoriae rufocollaris* (COCKERELL)

Male, length 13.5 mm.—Antennae pale ferruginous beneath, black above; legs pale ferruginous; abdomen nigro-aeneous, all segments densely fringed with pale pubescence.

Hab: W.A., V., Q. *M. pubescens* (SMITH)

Male, length 14.5 mm.—Black, antennae entirely pale ferruginous; abdomen broader; abdominal segments and thorax completely hidden under an excessively dense covering of pale greenish-buff hair; legs brown.

Hab: Geralton, W.A. *M. pubescens*, var. *splendida*, var. nov.

Male, length 15 mm.—Thorax with large black disc; abdominal segments 2-5 with blackish-brown bands; legs all one colour, blackish-brown.

Hab: Central Australia.
M. pubescens, var. *nigrescens* (FRIESE)

EXPLANATION OF FIGURES (Page 15).

1. Adult female *Melitribus glauerti*, sp. nov.
2. Front view of head-capsule; note position of the ocelli.
3. Tarsal segments with bifid claws and empodium.
4. Calcar or digging spur of posterior leg.
5. Calcar of median leg is strongly toothed; few bees have this.
6. Naked area of the sixth abdominal segment.
7. Strigil, or antenna-cleaner, of the anterior leg, has an extremely long malus and short velum.
8. The compound eye has a number of short peg-like hairs projecting from between the cornules.
9. The antenna has the slender third segment of the male.
10. Front view of head-capsule of male *Melitribus greavesi*, RAYMENT.
11. Front view of head-capsule of hive-drone, *Apis mellifera*, LINN.
12. Enlarged view of eye-facets.
13. Strigil of the European bee, *Meliturga clavicornis*, LATR.
14. Calcar of female *Meliturga*.
15. Front view of head-capsule of *M. clavicornis*.
16. Enlarged view of eye-facets.
17. A plumose hair from the leg of *Meliturga*.
18. A forked hair from the leg of *Melitribus*.
19. Portion of the tegument of the thorax of *M. glauerti*.
20. Portion of the wing-surface showing the stout hairs.

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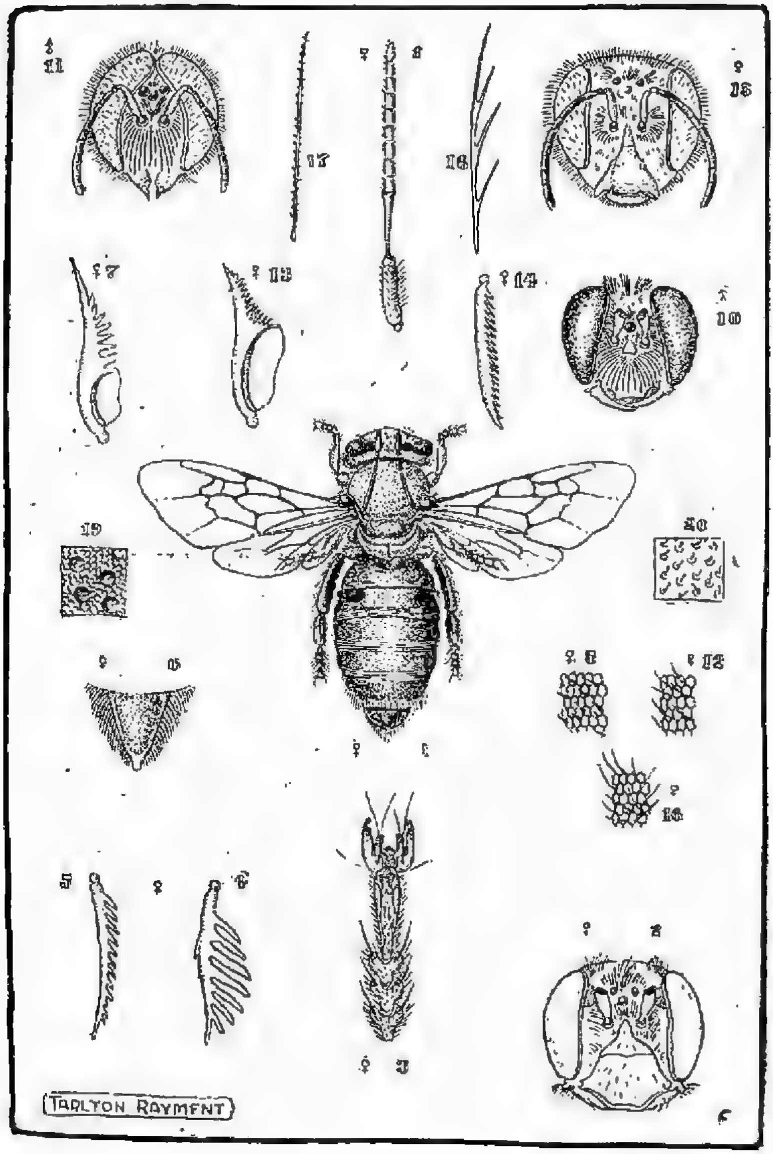
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TARLTON RAYMENT

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A NEW COLLETID BEE.

Division Colletiformes.

Family Colletidae.

Melitribus glauerti, new species.

Female, length 21 mm. approx.—Head brilliantly iridescent peacock-green, with blue along the orbital margins; face-marks nil; a cluster of white hairs surrounding the median ocellus, and the bases of the antennae; frons with numerous shallow punctures and a delicate sculpture; clypeus large, coarsely punctured, the anterior produced to a fine knife-like edge that projects over the labrum, a median transverse band of rich purple; supraclypeal area rising to a nodule with a short carina reaching to the median ocellus; vertex sharply developed, with a few fuscous hairs, the ocelli low down; compound eyes claret-brown, the anterior margins parallel, a large dark-purple macula between the lateral ocelli and the anterior margin; short peg-like hairs between the facets; genae with shallow punctures, a delicate sculpture, and numerous long white hairs; labrum blackish, sub-oval; mandibulae strong, with a small inner tooth, a triangular, green, prismatic area at bases, otherwise black, a strong nodule at base; antennae with large blue scapes, the second segment of the flagellum long and slender, the flagellum black above, obscurely lighter beneath.

Prothorax not visible from above; sterna iridescent green with long greyish hair; tubercles prismatic green, with a dense fringe of long, dull-white plumose hairs, a few fuscous ones immediately behind; mesothorax duller but still very iridescent, a minute shagreen, scattered large shallow punctures, a few fuscous hairs among the white ones; scutellum similar to mesothorax; postscutellum similar to scutellum; metathorax similar in colour and sculpture to mesothorax, but much longer white plumose hair, no enclosed area, but a median longitudinal line of copper; abdominal dorsal segments iridescent peacock-green, the hind margins narrowly suffused with copper, impunctate, a delicate transverse striation, two with a large dark-purple macula laterally, six royal blue, with an anal fimbria of black plumose hair, and a dark-brown naked area; ventral surface similar to dorsal, but each segment has a thick fringe of white hair.

Legs dark brown, exteriorly prismatic green, hind tibiae with much white hair above, and much brown hair beneath, tibiae and basitarsi of equal breadth; tarsi with first segment broad, the others short; claws reddish, deeply bifid, the empodium small; hind calcariae reddish, with eight long strong teeth; the malus of the strigil exceedingly long, the velum small; tegulae rough, prismatic green anteriorly, dark-brown posteriorly; wings slightly iridescent, faintly yellowish, anterior 12 mm., nervures dark brown, the recurrents received at the middle of the cubital cells, the basal straight, and just short of the nervulus; second recurrent much bent; cells: the radial rounded at apex, the second and third cubitals contracted at apex; pterostigma inconspicuous, dark-brown; hamuli nineteen in number, strongly developed.

Locality.—Yorkrakine, Western Australia, 1919. Type in the collection of the Museum, Perth, West Australia.

Allies: *M. smaragdinus* (SMITH), which is smaller, and has segments of abdomen fringed with white hair.

The species is dedicated to the Curator of the Museum, Mr. L. Glauert.

JUBILEE EXHIBITION.

Owing to the absence of members at Brisbane in May and June next it has been thought desirable to alter the dates of the Jubilee Exhibition. The dates now decided on are July 16, 17 and 18, 1930. The proposals of the committee include a dinner at the St. Kilda Town Hall on July 16, to which original members and their wives, representatives of kindred societies in Victoria and other States, and distinguished citizens will be the guests. Tickets will be available to members at 7/6 each. The first evening will be a free night to Club members to inspect the exhibits, to which every member will receive two tickets. The Exhibition will be officially opened on the afternoon of the second day and the public admitted on this and the following days.

A good series of exhibits has been promised, but there is room for much more, and members are asked to assist in this direction, particularly country members, who may be able to obtain living specimens of insects, reptiles, etc., of which a feature will be made, more easily than city members. A few wild flowers will also be acceptable. It is requested that all prepared to exhibit should write to the honorary secretary for particulars and to enable arrangements to be made.

THE OPOSSUM MOUSE.

BY NORMAN CHAFFER.

One of the most charming of the smaller animals of Australia is the rare little Opossum Mouse, *Dromicia nana*. Last year I had the good fortune to find one while roaming around in an area of heath country near Sydney. It had made its home in a disused nest of the Yellow-winged Honeyeater. It had burrowed beneath, and was completely covered by the lining of the nest, the soft, velvety material from Banksia cones. Ordinarily a nest of soft bark is constructed in a hollow limb or crevice in a tree.

In general appearance the Opossum Mouse is very similar to a Ringtailed Opossum in miniature, having the long, prehensile tail bare of hair on the under surface, prominent eyes and rounded ears. The fur is fine and fluffy and of a soft grey colour.

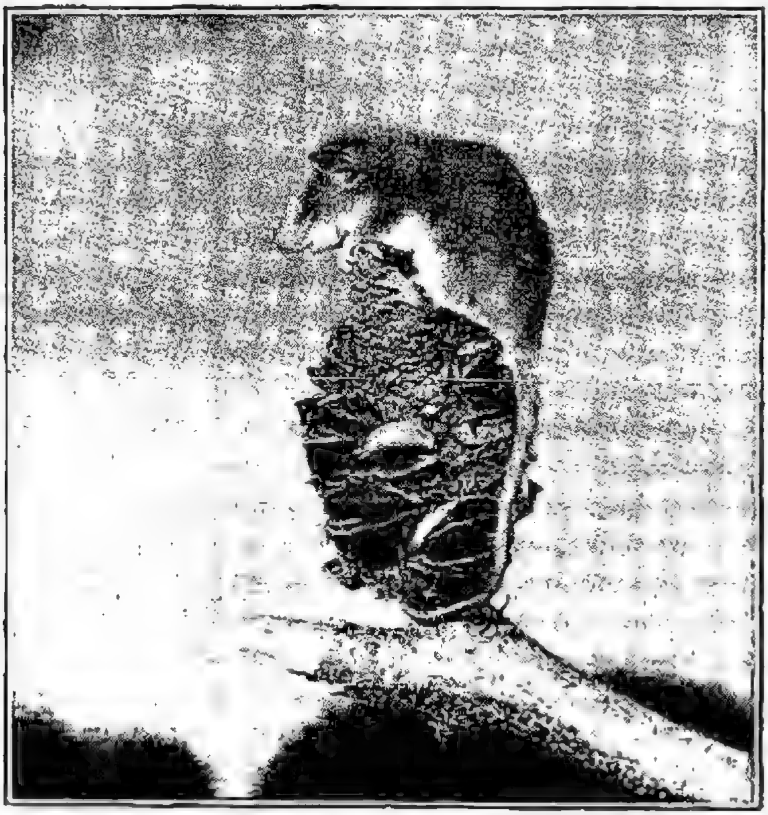

Photo by N. Chaffer

A Perfect Pose—*Dromicia nana*.

lighter on the under surface of the body. Often the tail is coiled in a spiral against the body in exactly the same manner as that of the Ringtail. The length of the body is about three inches, the tail being slightly longer.

The Opossum Mouse is a marsupial. Its range extends along the east coast of Australia, southwards into Tasmania. Like the Ringtailed Opossum, it is nocturnal in habit, sleeping during the day. At night it becomes active, running about the branches with agility, assisted considerably by its prehensile tail. It hibernates during portion of the winter, a habit which is considered to be unique among Australian mammals. During the spring and summer it is of rather slender build, but towards winter becomes much fatter, the tail in particular becoming greatly enlarged. During the dormant period it lives on the fat stored up in the tail.

EXCURSION TO THE BOTANICAL GARDENS.

A genial autumn afternoon drew about thirty members and friends to these beautiful gardens on March 15 in search of knowledge about the ancestry of certain of some of our native and introduced trees and plants. The success of this visit was largely due to the helpful foresight of our president, Mr. St. John, who pointed the way to specimen trees. Interpolated with the remarks of the leader, we would now and again hear the interesting reminiscent and historical facts from the president. We first visited the Seed Museum, a place well worth further study, for it is a magnificent collection, and the work of long collecting. Here the leader pointed out how the palaeobotanist relied to a great extent on seeds for his evidence of geological antiquity of plants, for these were capable of being transported for long distances by water, surviving the changes of heat and cold that would annihilate the plant itself; these could also be buried with less chance of decay than other parts of plants. Here we saw the large, strong seeds of the *Nipa* Palm, now living under sub-tropical conditions on the banks of the Ganges, but which once flourished under a similar climate in the London Basin. Coniferous seeds of the *Araucaria* claimed attention, since they are frequent fossils in the Wonthaggi coal measures. This ancient coal bed is made up of the fallen trunks and the massed foliage of this kind of conifer. *Casuarina* cones once left their impress on the molten lava of Victoria; whilst the wood of the Tertiary lignites, as at Yallourn, belonging to the Murray Pine, show how old is our indigenous flora. More interesting still are the leaves of the Waratah of New South Wales, fallen from trees that once lived on the old land surface underlying the Mallee; this land later on sank beneath the sea (more than three million years ago), to be again upraised nearly 200 feet above sea level. Attention was also directed to the remarkable piece of fossil Red Gum, found by the engineers of the Railways Construction Department at a depth of sixty-six feet below water level at Spencer Street Bridge, and referred to the Pleistocene age. Its wood is practically unaltered, through its being preserved in wet clay.

Continuing our walk around the gardens, we saw the magnificent *Ginkgo*, now extinct in the wild state in Victoria, though in Jurassic and Tertiary (Miocene) times forming one of the most beautiful kinds of trees of the ancient Victorian forest. The cycads were also pointed out as geological anachronisms, differing from most living plants whilst showing relation to the early seed-bearing plants of the coal period. The Redwoods and the *Taxodium* or Swamp Cypress of Dismal Swamp in North America had been judiciously planted together in the gardens, for curiously their fossil remains are now found side by side in the Oligocene fossil beds of Bovey Tracey in England, though extinct in Europe. —F.C.

SOME REMARKS ON HILL'S ELK-HORN FERN. *PLATYCERIUM HILLII.*

When on a trip to Queensland in June, 1921, and spending a few days at Kuranda, near the Great Barron Falls, I observed beside a road we were travelling a fallen Eucalypt having a stem about 125 feet long, and at about 70 feet from the base a large clump of native Elk-horn ferns resting in a fork where branches had developed from the stem. I secured a few plants, one of which I gave to the Botanic Gardens When I first examined it, it appeared to be quite distinct from the well-known *Platycerium bifurcatum* (Cav.), C. Chr., (*P. alcicorne*, Desv.). I found out later in Brisbane that such a distinction had been made by the late Mr. F. M. Bailey, Colonial Botanist, who had named it var. *Hillii* of *P. bifurcatum.* I subsequently learned, however, that in Christensen's *Index Filicum* it was listed as a distinct species. Having been sent by its discoverer, Mr. Walter Hill, a former Director of the Brisbane Botanic Gardens, to Veitch and Sons, Royal Nurserymen, of London, in 1878, it was described by the great Fern authority, T. Moore, under the name of *P. Hillii*, and recorded in the *Gardeners' Chronicle* of October, 1878. To aid fern students in distinguishing the plant from the better known *P. bifurcatum*, the following notes may be found useful.

(1) Whole plant green, not of a greyish colour as in *bifurcatum.*

(2) More robust plant, with stouter, broader and more erect fertile fronds.

(3) Ramification confined to the upper one-third of the frond. 15-18 inches across, and three-parted.

(4) Sori formed in small roundish patches near the base of the ultimate segments, not in the sinus.

(5) Mature fronds green and nearly glabrous.

Specimens of this fern were exhibited at the March meeting

F. PITCHER.

THE BUSH COMES BACK.

To a former resident of Walhalla it was interesting to note, on the recent excursion, how, on the decay of the village, the bush is reasserting itself. On many of the hill slopes which, sixteen years ago, grew nothing larger than Bracken, there are now young eucalypts up to twenty feet in height, and once favourite fern gullies are inaccessible for an all-embracing tangle of thorny brambles. The tramway tracks winding round the hills are encumbered with growths of Cassinias and saplings of various eucalypts and acacias. There are traces of Wallabies on these tracks just above the level of some of the houses in the township. Once one had to go out a mile or so to see a Lyre-bird, but on this occasion two were seen to glide across the gorge of Stringer's Creek within sight of the Railway Station.

A. E. R.

The Victorian Naturalist

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall on Monday, May 12, 1930. The president, Mr. P. R. H. St. John, occupied the chair, and there were about 100 members and visitors present.

Mr. St. John expressed his thanks for the condolence extended to him by the Club in his recent bereavement.

CORRESPONDENCE.

From the honorary secretary of the Bird Observers' Club, inviting members to a lecture entitled "On the Grampians With a Camera," by Pastor C. L. Lang, at the Independent Hall, on May 13, also to a series of demonstrations at the Bird Room, National Museum, on the afternoons of May 17 and 31, June 14 and 28, July 19, and August 2, 1930.

From the senior activities' secretary of the Young Women's Christian Association, Melbourne, requesting talks on Nature Study by Club members, for four dates in May and June.

REPORTS.

Reports of excursions were given as follow:—Walhalla, Mr. A. E. Rodda (in the absence of Mr. F. E. Wilson); St. Kilda Gardens, Mr. V. H. Miller; Edgar Creek, Coburg, Mr. W. Hanks.

ELECTION OF MEMBERS.

The following were duly elected on a show of hands:—Miss L. Naylor, B.Sc., Canterbury; Miss I. Edwards, Surrey Hills; Mr. L. A. Thomas, B.Sc., University; Miss D. Coleman, Blackburn; Mrs. E. Harrison, Jolimont; Mr. R. T. Grieve, M.Sc., University, as ordinary members, and Mr. D. Orchard, Kinglake, as a country member.

ELECTION OF AUDITORS.

Messrs. A. S. Blake and A. G. Hooke were elected as auditors for the year.

NOMINATION OF OFFICE-BEARERS, 1930-31.

Nominations were received as follow:—President: Mr. C. Barrett, C.M.Z.S.; vice-presidents: Messrs. V. H. Miller, G. Coghill, and A. E. Keep; honorary treasurer: Mr. J. Ingram; honorary librarian: Dr. C. S. Sutton; honorary editor: Mr. C. Barrett, C.M.Z.S.; honorary secretary: Mr. A. E. Rodda; honorary assistant secretary and librarian: Mr. H. B. Williamson, F.L.S.; committee: Miss J. W. Raff, M.Sc., F.E.S., Rev. W. Tiopett, F.L.S., Messrs. E. E. Pescott, F.L.S., C. Daley, B.A., F.L.S., F. E. Wilson, F.E.S., L. L. Hodgson, and Tarlton Rayment.

GENERAL BUSINESS.

Mr. E. E. Pescott briefly outlined the proposals for the Jubilee Exhibition, and appealed to members generally to assist with exhibits.

Mr. A. J. Swaby, as organiser of the Microscope Section at the Jubilee Exhibition, asked members to assist by the loan of instruments and slides.

Brief nature notes were contributed by Mr. W. S. Abraham, on the prevalence of Platypi in the Goulburn River; and by Mr. A. E. Rodda, on native parrots in the Fitzroy Gardens.

LECTURE.

Mr. L. L. Hodgson read a very interesting paper describing the scenery and giving nature notes made by him on a journey to Sydney, via the Prince's Highway. The paper was illustrated by numerous photographs projected on the screen by the epidioscope, and also by herbarium specimens of plants collected en route.

EXHIBITS.

By Mr. B. Blackbourn.—Live female Sawfly and cluster of larvae on eucalyptus leaf, species *Perga lewisi* (?).

By Miss G. E. Neighbour.—Small specimen Hippocampus (seahorse).

By Mr. C. J. Gabriel.—Marine shells: *Murex triformis*, Reeve, Vic.; *Murex denudatus*, Perry, Vic.; *Murex cervicornis*, Lam., N. Aust.; *Murex stainforthi*, Reeve, W. Aust.

By Mr. S. R. Mitchell.—(1) Set of small stone artifacts, consisting of "crescents," "points," flaked knives, and scrapers, from an old lake-side camp near Cape Liptrap. (2) Set of the most highly specialised Tasmanian small stone implements (duck bill groovers and "scrapers"), showing the great difference in the lithic cultures of the Australian and Tasmanian races. (3) Four hafted stone axes, Melville Island, North Australia.

By Mr. A. E. Rodda.—Leaf of *Eucalyptus polyanthemos* (sucker foliage), size 8 in. by 5½ in., from Chiltern.

By Mr. L. L. Hodgson.—Herbarium specimens of New South Wales flora, illustrating paper read.

By Mr. H. B. Williamson.—Dried specimens of plants from the Northern Mallee, illustrating exhibitor's article in May *Naturalist*: *Helipterum Stuartiana*, Sond.; *Beyeria opaca*, F. v. M.; *B. Leschenaultii* (DC), Baill.; *Casuarina Muelleriana*, Miq., Slatey Sheoke; *C. pusilla*, Macklin, Little Sheoke; *Pultenaea densifolia*, F. v. M.; *Herniaria hirsuta* (Tourn.), L.; and *Mesembrianthemum bicorne*.

By Mr. T. S. Hart.—(a) *Desmodium brachypodum*, A. Gray, Large Tic-trefoil, collected in Bulumwaal district by Miss A. Birch, and previously considered as doubtfully recorded for Victoria. (b) *Spergularia media* (L), *S. marginata* (DC), F. v. M., coast sand-spurrey, hitherto included under *S. rubra*.

SOME PLANTS OF THE NORTHERN MALLEE.

(Part III.)

BY H. B. WILLIAMSON, F.L.S.

Stipa platychaeta, Hughes, Flat-awned Spear-grass.

A tall, hard grass with rigid, branching stems, often to a height of three feet, resembling *S. acrociliata*, Reader, but easily recognised by its curved awns, nearly three inches long, the lower part being twisted and slender, and the upper part flattened and one-nerved on each side. Thirty miles west of Mildura in salt-bush country, October, 1928, not previously recorded for Victoria.

Stipa Drummondii, Steud., Cotton Spear-grass.

At Murrayville and near Mildura I collected specimens of this tall, coarse grass. It may be easily distinguished from other species by the soft vestiture of the leaves and sheaths, which gives the plant a greyish appearance somewhat like *S. semibarbata*, var. *mollis*, but with a less dense panicle and smaller glumes. The grass described by Reader (*Victorian Naturalist*, Vol. XVI., p. 158) under the name *S. Luehmannii*, and the grass described by Black (*Proc. Roy. Soc., Tas.*, Vol. 44) as *S. horrifolia*, are shown by Hughes to be not sufficiently distinct as to warrant their separation from *S. Drummondii*, Steudel, 1855.

FLORA OF THE PINK LAKES.

These saline depressions between the sandhills about 14 miles north of Underbool are the source of large quantities of salt. At the time of my visit over twenty tons daily were being brought to Underbool Railway Station by a three-ton motor lorry, besides a large quantity being carried there on the backs of camels. Some of this was for use in treating St. John's Wort in the Bright district. Some hundreds of tons were seen in stacks awaiting transport. Although called the Pink Lakes, I saw no indication of colour, either in the salt or in the water, but the name is by no means a misnomer, as many can testify, the salt often displaying a bright pink tint, due either to chemical impurities or to an organism such as a microscopic alga. There are four of these lakes, two being very small. I made the circuit of the largest in about four hours, collecting on my way, and saving time in places where I could use my bicycle. Huge tussocks of Porcupine-grass, *Triodia irritans*, covered the sandhills, and presented a fine sight, as they were in full flower. Among these, both *Nicotiana glauca*, the introduced weed, and *N. suaveolens*, were growing, and on the Western side the rarer plants typical of the Mallee, *Pimelea trichostachya*, *Helipterum hyalospermum*, *H. Stuartiana*, and the slender, wiry *Podolepis capillaris*. Three Everlastings, *Helychrysum bracteatum*, *H. apiculatum*, and *H. leucopsidium*, the last named tangled among the Triodia, were quite common, and amongst bushes of *Eucalyptus incrassata*, the only Eucalypt I saw there in flower, were the twining *Thysanotus Patersonii*, and the yellow *Bulbine semibarbata*.

The tallest plant quite near the lake was *Melaleuca halmaturorum*, Blistered Paper-bark, clumps of which grew to the height of about 20 feet, with stems nearly a foot through and their roots in the densely salty earth. The bark stripped off in thin flakes, resembling the soft, creamy coloured leather much used for binding account books. This plant, and another shrub with rough, not papery bark, was formerly included under the name *M. pustulata*. Hook. f., but it has been shown to agree with Mueller's *M. halmaturorum*, the earlier name for a plant, the type of which came from Kangaroo Island, while in 1910, the other plant, which is quite distinct in bark, petals and calyx lobes, was described by Ewart and Wood under the name *M. neglecta* (*Proc. Roy. Soc., Vic.*, August, 1910). The vernacular name, Blistered, is derived from the species name "*pustulata*." As "*halmaturorum*" means "of the kangaroos," referring to the locality of the type, a better vernacular would be Kangaroo Paper-bark. Camels are apparently fond of the tender shoots, for I saw many upper branches broken off, and was told that those animals had pulled them down.

On the saline flats at the margin of the lake, presumably liable to inundation, there is a most interesting and showy plant association. On one spot, an area of about fifty yards square, may be seen the white foliage of *Atriplex vesicarium* and *Bassia uniflora*, which are growing right on the edge of the briny water. *Salicornia australis*, forming dense patches of dark green, bushes of *Arthrocnemum halocnemoides*, with their varying tints of red and brown, *Plagianthus glomeratus*, with yellow foliage, and, towards the sandy ground, patches of *Mesembrianthemum australe*, its leaves showing a wonderful range of colour from red to dark green, where they are not hidden by the masses of brilliant pink flowers, and the introduced Ice Plant, *M. crystallinum*, rivalling its native cogener in the beauty of glistening foliage, and its large, creamy flowers. The Ham-and-Eggs Daisy, *Myriocephalus Stuartii*, growing about two feet high, with flowers having white rays round a large yellow centre, giving a fanciful resemblance to a fried egg, adds to the beauty of the wildflower garden. Even blue is not entirely absent, for this is furnished by small bushes of Bugle, *Ajuga australis*, growing on the outer edge. Other plants appearing among this wonderful floral display are *Frankenia foliosa*, *Salsola Kali*, *Enchylaena tomentosa*, *Atriplex prostratum*, and *Stipa scabra*, a grass very common in the Mallee, growing often two feet in height and remarkable for the beauty of its profuse flowering and fruiting panicles, with long, curved, capillary awns.

It was in this area also that I collected *Kochia oppositifolia*, previously recorded for "Murray Desert," and, therefore, doubtful for Victoria. It has small opposite leaves, thick and trigonous, and its fruit calyx is provided with five pink, unequal membraneous lobes.

Here, also, I came across a plant which, in general appearance, tallied with *Threlkeldia salsuginosa*, F. v. M., the resemblance being remarkable until the hardened perianth tube is examined. It is *Babbagia acroptera*, F. v. M., and Tate var. *deminuta*, J. M. Black, one of the Squash-bushes of the interior of the continent. The perianth tube, about 2 mm. long, is, in the normal plant, provided with two small, unequal, vertical membranous wings. In this variety only one wing is apparent, and this is a thick, reddish projection without a membrane, thus approaching closely the fruit of *Threlkeldia salsuginosa*. The enclosed seed, however, is horizontal, while in *Threlkeldia* it is vertical, or nearly so. In the National Herbarium I found specimens from the Mallee mixed up with those of *Threlkeldia*.

SAWFLY GUARDS EGGS AND LARVAE.

Mr. B. Blackbourn exhibited at the May meeting of the Club a female Sawfly and a cluster of larvae, with the following note:—

The species is believed to be *Perga lewisi*, which is interesting on account of the fact that, after the female has deposited her eggs in the tissue of the leaf, she stands over them until they hatch, and remains with the larvae for some time. If disturbed, she raises her body and opens her jaws in a threatening manner. The specimen exhibited was found on some gum-tips in a vase on April 23, the eggs having evidently only recently hatched. Since then, as the larvae consumed one leaf and moved to another, the "fly" has remained with them and followed them from leaf to leaf.

When it is remembered that the gum-tips were cut somewhere in the country, sent down to a florist in Melbourne, and carried from the shop to my house and arranged in a vase, it is rather wonderful that the insect was not only willing, but able, to cling to her leaf in spite of the rough treatment.

EXCURSION TO EDGAR CREEK.

A party of 14, including members of the Mornington F.N.C., attended this outing on May 10. The afternoon was fine, and the country traversed rather picturesque. The leader showed the location of a deposit of Diatomacious earth, and made a few remarks on its composition and quality. We then proceeded to the junction of Deanery and Merri Creeks, where we examined a flow of basalt of fine texture, overlying a soil that is partly composed of quartz sand, the whole of which overlies a course-grained basalt, with large crystals of olivene scattered through it. The lower flow is very much eroded. From this point we proceeded to a fault in Newlands Road that crosses Coburg from the south-east to the north-west, and so on to the City Council quarry, where there are two flows of basalt. The lower flow is not being worked. The total depth of stone is over 80 feet. We next went to Edgar Creek, and spent the remainder of the afternoon in examining the sedimentary rock of Silurian age, passing on our way along a deposit similar to the Bad Lands.

W. HANKS.

ZEOLITES FROM FLINDERS.

BY S. R. MITCHELL.

Minerals of the Zeolite group are represented in Victoria by many interesting and beautiful species, and are found principally in the Basalts belonging to both the older and younger volcanic series. The same species, however, are not common to the two formations, each possessing a different and characteristic suite of minerals. These minerals are of secondary origin, and have been formed by the solution of part of the more soluble mineral constituents of the Basalt, with subsequent crystallisation in the cavities of the rock, during the slow cooling from its once molten condition. This slow cooling seems to have been an important factor in their formation, as it is only in the thicker flows and masses, where the cooling would naturally be most prolonged, that these minerals usually occur.

The best collecting ground for Zeolites in Victoria is the stretch of coast extending from Flinders to Cape Schanck, where the older volcanic rocks are exposed in high cliffs and wide rock platforms. This locality is part of a very extensive occurrence of the older volcanic series, embracing the south-eastern portion of the Mornington Peninsula, Phillip Island, and parts of French Island. The coastal sections show the formation to have been made up of a number of distinct lava flows, some of which are of considerable thickness, together with much vesicular and scoriaceous material. The total thickness must have been very great. A bore that was put down at Flinders in 1911, by the Victorian Mines Department, passed through some 900 feet of these rocks. Some of the cliffs also rise to a great height, up to 270 ft. above sea level. Further evidence, obtained by boring in other places, indicate that volcanic activity in Miocene times was very great and widespread.

These rocks can be described generally as Olivene Basalts, varying greatly in character. They range from a dense, black, fine-grained magmatic form, passing through all stages to the most vesicular of volcanic products. In places the more vesicular portions, and possibly volcanic ash, have decomposed completely into clays of quite a large range of colours. It is in the debris from the cliffs and rocks on the foreshore that the Zeolites can be collected, together with several other secondary minerals. A large proportion of the steam cavities contain mineral matter, and groups of crystals frequently line the larger vughs. An amygdaloidal structure is common through the complete filling of the steam cavities by mineral matter. When decomposition has taken place, the amygdules are readily separated owing to their greater resistance to destructive agencies.

Minerals of the Zeolite group have chemical resemblances in that they are all hydrous silicates of aluminium with calcium and sodium, or both, rarely with potassium, barium or strontium. They behave similarly before the blowpipe, fusing with intumescence. They have low refraction, but differ widely in double refraction, and crystallise in different systems. They are almost wholly secondary minerals, formed by hydration and alteration of alkalic aluminous silicates, chiefly felspars, leucite, nephelite, and the sodalites; occurring in rocks, mostly igneous, containing the minerals named. The Zeolites that are found near Flinders are Analcite, Natrolite, Phillipsite, Gmelanite, Stilbite, Sphaerostilbite, and Chabazite, and the following particulars should assist one in their identification. There are also other minerals to be found there, among them being Olivene, Augite, and Plagioclase Felspar, Arragonite, Calcite, Vivianite, Halloysite, and Magnetite. The last named is of particular interest, as it occurs near Cape Schanck in small, angular pieces up to large lumps, evidently derived from large segregations of this mineral in the Basalt.

ANALCITE is a hydrous silicate of alumina and soda, crystallising in the cubic system. It occurs in this locality as (a) partially detached brilliant, limpid crystals, in the cavities of the Basalt; (b) milky white, opaque detached crystals and groups; (c) indistinct crystal linings to the cavities, each crystal having few faces developed. The detached crystals have the form of the trapezohedron, a regular symmetrical figure bounded by twenty-four trapezium faces. Usually these four-sided faces have perfect surfaces free from twinning, and are a ready means of identifying the mineral. Some specimens show minute colourless crystals on a deep red background, and have a beautiful rich red colour. When developed on the black Basalt, they appear black, and similarly, when on grey or white decomposed rock, they are white and milky. Crystals range from microscopic in size to quite large ones up to 20 mm. in diameter. Analcite is one of the most plentiful species to be found in the locality.

NATROLITE is a hydrous silicate of alumina and soda and crystallises in the Rhombic system. It is found as (a) exceedingly slender crystals, often found singly in the smaller cavities of the Basalt, and much too fine to distinguish the characteristic rhombic prisms except by the aid of the microscope; (b) compact masses of acicular crystals forming a fibrous lining to the larger cavities. This lining may be 1.0 mm. in thickness, and milky white in colour. The larger projecting crystals show under the microscope rhombic prisms with pyramidal terminations; (c) white compact matter material, completely filling the original vesicules in the Basalt. It is commonly associated with Analcite, Calcite, and Gmelanite.

PHILLIPSITE is a hydrous silicate of alumina, lime, and potash, a crystallising in the rhombic system. It occurs as (a) detached composite twins, resulting in nearly square prisms terminated by what appears to be pyramidal faces, each with a double series of striations running from a medial line; (b) as detached twins and groups clustering on the wall of the cavities of the Basalt. The mineral is usually of pinkish or light flesh colour, occasionally colourless or white. This species is rare in this locality.

GMELANITE is a hydrous silicate of alumina, soda and lime, and crystallises in the hexagonal (rhombohedral) system. It occurs (a) as detached characteristic six-sided twins, which approximate short hexagonal prisms with pyramidal faces, top and bottom, and sometimes with basal planes. Polysynthetic twinning gives rise to lines parallel to the edges of the pyramid, showing skeleton faces of a triangular outline. The colour is usually a deep flesh colour, often white to colourless. The crystals are found up to 25 mm. in diameter; (b) as a reddish and crystalline mass, often filling the smaller cavities; (c) as indistinct crystal linings to cavities, but with characteristic colour. This mineral is also very plentiful in the locality.

STILBITE is a hydrous silicate of alumina, lime and soda, and crystallises in the monoclinic system. It occurs as (a) minute crystals of a distinctly tabular habit; (b) small sheaf-like groups or confused masses lining cavities of the Basalt, or covering other minerals. The crystals are clear and opaque, and of a somewhat pearly lustre. This species is quite different in appearance to all the other Zeolites in the locality, with the exception of Natrolite, but it can be readily distinguished from it by its habit.

SPHAEROSTILBITE is a very interesting variety of Stilbite, and occurs sparingly as smooth white spheres, often mounted on the tips of slender Nitrolite crystals. Usually it is scattered over Analcite, or as a translucent coating on Calcite or other mineral. It is characterised by a decided waxy lustre.

CHABZITE is a hydrous silicate of alumina, with lime and soda, and crystallises in the hexagonal (rhombohedral) system. It occurs usually as well-defined, simple rhombohedrons, from 2 to 25 mms. across, and also as indistinct coating to walls of cavities, and is readily identified by the rhomboid faces. It may have a deep flesh red, colourless, or white and opaqque colour. The crystal faces often show polysynthetic twinning parallel to the sides of the rhomb.

THE ORCHID *PRASOPHYLLUM NIGRICANS*, R.Br.

By the Rev. H. M. R. Rupp, Weston, N.S.W.

Fitzgerald remarks of this species: "*Prasophyllum nigricans* is one of the forms that are ever puzzles to the botanist. So close does it come to some others that no description can separate them without the aid of drawings or specimens. . . . The descriptions do not agree, as given by different authors, and even the specimens can hardly be said to be consistent with themselves."

Notwithstanding all the additional knowledge gained through the observations of many botanists since these words were written, I think most orchid students will endorse Fitzgerald's comments to-day. During the present autumn I have had exceptional opportunities of studying this curious little orchid. The town of Weston, which lies in the heart of the South Maitland coal-fields, between Kurri Kurri and Cessnock, is surrounded by some miles of sandy scrub, composed largely of paper-bark Melaleucas, Callistemons, dwarf Banksias, and Grass-trees.

This is ideal country for the "pygmy" Prasophylls, but up to the present, I have found them only represented by *P. nigricans*, which occurs literally in millions. On my first excursion into the scrub, within an hour I had seen more of these orchids than I had ever been able to find in thirty years previously. It seems impossible to get away from them until the character of the scrub changes. They were flowering at the beginning of March, and were still "going strong" in the middle of April.

The New South Wales forms of this plant are, I think (generally speaking), taller than those in the Southern States. Mr. Pescott says: "Two to five inches high." Five inches would be a very dwarf plant here. I have frequently taken specimens over 12 inches, and the average would be eight or nine. The spike of flowers is often over an inch in length; I have one nearly two inches, with 35 flowers. On the other hand, it is not uncommon to find plants with only two or three flowers. In the Weston scrub, where such innumerable plants are growing, variability is great. It is, in fact, most difficult to define the features which convince one of the identity of many forms. Superficially, some of them are so extraordinarily like *P. Ruppii* in appearance, that I was quite sure I had found that species until the magnifier dispelled the belief. Others approach very closely the Northern form of *P. intricatum*.

As *P. Ruppii* and *P. intricatum* both have the labellum and other segments beset with hairlets, it may be asked how they resemble *P. nigricans*, which is hairless. The answer is that several forms of the last-named here, apparently, are beset with hairs towards the apex of the labellum. Careful examination, however, suggests that these are not true hairs, but are due to very fine and narrow indentations of the lamina of the labellum itself. Comparatively few labella are quite entire. The commonest form has irregular indentations near the apex, which is sometimes acuminate and recurved, sometimes broad and mucronate. In some, these indentations are more regular, forming "teeth," and occasionally they are so numerous, and the teeth are so narrow as to give the impression of hairs.

The paired sepals are, in some cases, vivid green, in others purplish-black, like the rest of the flower. In the great majority of cases they are gland-tipped. The most constant feature of the flower, among all other variations, is the column, with its large and prominent, deeply bifid wings. The inner arm of the bifid wing is almost invariably green, the outer dark purple. Occasionally the latter is very definitely notched at the tip.

NOTES FROM TYERS.

Usually there are many pairs of Welcome Swallows (*Hirundo neoxena*) about the Tyers district during the spring, and at the end of the summer hundreds gather, preparing for flight, but during the past Spring I did not once see more than four birds, and since then have never seen more than twelve, and even that number only once. I know of no reason for this unexpected rarity, and have wondered whether observers in other districts noticed a similar decrease, or whether the swallows in some other place appeared more numerous, as here they became rare.

Though a common plant, and very well known, our Necklace Fern (*Asplenium flabellifolium*) has one interesting habit unfamiliar to many who gather it. The rhachis, or stalk, of the frond, as we know usually extends, threadlike and bare of pinnae an inch or more beyond the remainder of the frond, suggesting the common local name, "Rat's-tail." The reason for this rarely appears. It is to help in the increase of the plant. Under some conditions the tip of this stalk hardens and produces a shoot. Where it is in contact with the ground it takes root and sending up new fronds forms a second plant. Thus one may find a long frond with a plant at each end. Sometimes fronds from the second plant also root, and in time a chain of plantlets is formed, each one linked to the next by a long curved frond.

The flowering season of *Correa rubra*, the badge of our Club, is very long, usually at least six months, and I have known a plant to bloom continuously from March to November, but a plant of *Correa aemula*, obtained from the Grampians, which I have in a pot appears to have an even longer flowering period. It has not been without flowers since last September, and is now filled with buds which promise unbroken flowering till next Spring.

—J.G.

EXCURSION TO THE ABORIGINAL STONE AXE QUARRIES, MT. WILLIAM, LANCEFIELD.

Thirty members and friends, conveyed in six motor cars, met at Seymour on March 23, and then proceeded to Mt. William, near Lancefield. This is not the first time the Club has visited this remarkably interesting place, combining as it does in high degree anthropological and geological interest, as well as scenic beauty. Mr. A. S. Kenyon gave a short talk on the reasons for the aboriginals resorting to this and other quarries, and explained the evolution of stone implement culture.

Mr. S. R. Mitchell read a most instructive paper, of which an abridgement follows, on the geology and mineralogy of the Mount:—

"Mt. William is the northern extremity of an outstanding ridge of resistant rocks that extends in a southerly direction for about twelve miles. The ridge consists of diabase, cherts, and shales of Cambrian age, belonging to the Heathcotian series of Victoria.

"Diabase outcrops in many places on the mount, and from a number of these the aborigines formerly obtained suitable stone for axe making. Prof. Skeats has shown that these rocks represent a submarine series of lavas and tuffs interstratified with sediments now mainly cherts. To the west they change into fine bedded black shales and cherts containing lower ordovician fossils (Lancefieldion). Still further west these give place to the upper Ordovician (Bendigonian) series. The strike and dip of the three formations agree fairly closely, and indicates a regular deposition of sediments continuing from Cambrian to upper Ordovician times. After the elevation of these Cambrian and Ordovician rocks, entirely different types of marine sediments were deposited during Silurian times, giving rise to shales, sandstones and mudstones, now represented by the rocks forming the low wooded hills to the east of Mt. William. An extensive intrusion of granitic rocks on the north separates the Mt. William range from another important development of the Heathcotian, the Colbinnabbin Range, which extends some thirty miles north from Heathcote. Mt. Camel, near Heathcote, is another site from whence axe stones was obtained.

"Diabase is a somewhat vague term, and includes many varieties of rocks, and probably some of the altered fragmental ashes in this area. It consisted of Augite, Plagioclase, Felspar and Ilmenite, all much altered. Some of the diabase of Mt. William has a more or less platy or foliated structure, and much of the original augite has been converted into secondary Augite and fibrous actinolite, imparting to the rock a special toughness combined with a decided tendency to split into suitable shape, accounting for its wide use by the aborigines. These changes have probably been produced by the metamorphic effect of the granitic intrusion to the north. Axe stone has also been quarried by the natives in many other parts of Victoria, as at Mt. Stavely, Chatsworth, on the Hopkins River, near Stawell, the Howqua River, Dookie, and the Dog Rocks near Geelong."

PARROTS IN THE FITZROY GARDENS.

The rarest bird I have seen in the Fitzroy Gardens was observed on May 12. It was a male Cockatoo-Parrot, evidently an escapee from an aviary, as it was easily approached. Seeing it at first from a distance, its grey colour and peculiar flight made me think that it was either a Pallid or a Fantail Cuckoo. Two White-plumed Honey-eaters were evidently under the same delusion, as they pursued it vigorously. Two male Crimson Rosellas, in adult plumage, have been almost daily in evidence since January.

—A.E.R.

THE CLUB'S JUBILEE.

The fiftieth year of continuous and progressive existence of the Field Naturalists' Club of Victoria will be celebrated on July 16, 17 and 18, 1930.

A dinner will be held at the St. Kilda Town Hall, at 7 p.m., on Wednesday, July 16. Original members and their wives, and representatives of kindred societies, will be guests. Tickets will be available to members and others at 7/6 each.

Members are invited to view the exhibits at 8 p.m. on July 16, and each member will receive two tickets for this evening. Exhibitors' tickets will be available for members and others supervising and assisting in the various sections.

The Exhibition will be officially opened on the afternoon of July 17, and remain open on that evening, and the afternoon and evening of July 18. The prices of admission will be 1/-.

Mr. E. E. Pescott, F.L.S., has been appointed Director of the Exhibition. The organisers of the various sections will be as follow:—

ALGAE (Seaweeds).—Mr. W. H. Ingram.
AQUARIA.—Mr. V. de Norville.
BOTANY.—Mr. E. E. Pescott, F.L.S.
BOTANICAL NOVELTIES.—Mr. P. R. H. St. John.
CONCHOLOGY.—Mr. C. J. Gabriel.
ENTOMOLOGY.—Mr. F. E. Wilson, F.E.S.
ETHNOLOGY.—Mr. A. S. Kenyon, M.I.E., Aust.
GEOLOGY AND PALAEONTOLOGY.—Mr. W. S. Abraham.
MARINE ZOOLOGY.—Rev. Geo. Cox.
MICROSCOPY.—Mr. A. J. Swaby.
MARSUPIALS (Living).—Mr. D. H. Fleay.
REPTILES AND AMPHIBIANS.—Mr. H. W. Davey, F.E.S.
ORNITHOLOGY.—Mr. C. Barrett, C.M.Z.S.
POND LIFE.—Mr. W. Ramm.
WILDFLOWERS.—Mr. H. B. Williamson, F.L.S.
ZOOLOGY.—Mr. J. A. Kershaw, F.E.S.

Members (especially country members) who can obtain specimens, preferably living, or loan instruments, are asked to communicate with the honorary secretary, so that arrangements may be made for transport, etc. A good response from members is requested in order to ensure success of this unique exhibition.

It is hoped to make a display of winter wild flowers. Members able to contribute should communicate with Mr. H. R. Williamson, 231 Waverley Road, East Malvern, S.E.5, as early as possible, regarding what they can contribute. Exhibits of uncommon Victorian plants, growing in pots, are desired.

All exhibits must be at the hall not later than 3 p.m. on Wednesday, July 16.

—A.E.R.

The Victorian Naturalist

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

The Annual Meeting of the Club was held in the Royal Society's Hall on Monday, June 2, 1930. The president, Mr. P. R. H. St. John, occupied the chair, and about 80 members and visitors were present.

REPORTS.

Reports of excursions were given as follow:—Austin Hospital, shrub planting: Dr. H. Flecker; National Herbarium: Mr. J. W. Audas, F.L.S.

ELECTION OF MEMBERS.

The following were duly elected, as ordinary members, on a show of hands:—Mr. and Mrs. R. Smart, Black Rock; Mr. F. Ford, Ivanhoe; Mr. J. A. Fowler, Tooronga.

ELECTION OF OFFICE-BEARERS AND COMMITTEE.

The following were declared duly elected:—President, Mr. C. Barrett, C.M.Z.S.; vice-presidents, Mr. Geo. Coghill and Mr. V. H. Miller; honorary treasurer, Mr. J. Ingram; honorary librarian, Dr. C. S. Sutton; honorary editor of the *Victorian Naturalist*, Mr. C. Barrett, C.M.Z.S.; honorary secretary, Mr. A. E. Rodda; honorary assistant secretary and librarian, Mr. H. B. Williamson, F.L.S.; committee, Miss J. W. Raff, M.Sc., F.E.S., Messrs. C. Daley, B.A., F.L.S., L. L. Hodgson, F. E. Wilson, F.E.S., and E. E. Pescott, F.L.S.

ANNUAL REPORT AND BALANCE SHEET.

The annual report was read by the honorary assistant secretary, and was approved on the motion of Mr. F. E. Wilson, seconded by Dr. H. Flecker.

The honorary treasurer submitted the financial statement for the year, which was outlined on the blackboard by Mr. A. G. Hooke (honorary auditor), who mentioned that the assets of the Club had now reached the total of £1000. On the motion of Mr. Hooke, seconded by Mr. J. W. Audas, the balance sheet was taken as read and adopted.

PRESIDENT.

The newly elected president (Mr. C. Barrett) then took the chair, and was welcomed by the retiring president (Mr. St. John).

PAPER.

Mr. F. G. A. Barnard (foundation member) read a paper of great interest to members, giving briefly the history of the Club during the years 1920 to 1930.

EXHIBITS.

By Miss G. F. Neighbour.—Paintings of Butterflies, Moths and Wildflowers.

By the Honorary Secretary:—Designs for bookplate by Mr. Quentin Sutton.

By Master Pat. Flecker.—Live Tadpoles.

By Mr. A. J. Swaby.—Plants of Wild Violet for distribution.

By Mr. H. B. Williamson.—Dried plants illustrative of the exhibitor's article in the June *Naturalist*:—*Stipa platychaeta*, Hughes; *S. Drummondii*, Steud.; *Melaleuca palmaturorum*, F. v. M.; *M. neglecta*, Ewart, and some interesting species from the Pink Lakes and Murrayville.

ANNUAL REPORT.

To the Members of the Field Naturalists' Club of Victoria.

Ladies and Gentlemen,—

Your committee has much pleasure in presenting the Fiftieth Annual Report, for the year ending April 30, 1930, and desires to express its gratification that the continued success of the Club has been maintained, and that this, the year of our Jubilee, continues to show an increased record of membership.

Our membership roll now stands at 1 honorary, 9 life, 278 ordinary, 79 country, and 19 associate members, making a total of 386, which is an increase of 7 members above the total of last year. Fifty-two new members have been elected, of whom 38 were ordinary, 1 honorary, 6 country, and 8 associates.

It is with deep regret that we have to record the deaths of three members during the year. Of these, Sir Baldwin Spencer, F.R.S., and Dr. J. A. Leach were eminent in the field of natural science, and the Club is greatly indebted to them for the invaluable assistance they freely gave, both on the scientific and executive sides. The news of the death of Sir Baldwin Spencer was received within a few days of the date on which he was unanimously appointed an honorary life member of the Club, at its July meeting. Dr. J. A. Leach has left an enduring memorial in his books, *An Australian Bird Book*, and *Australian Nature Studies*, both of which will long be valued for their concise and accurate information. Mr. H. L. Torpy, who died in September last, was a member of the Club from September, 1926.

It is fitting that the Club should record with regret the death of Mrs. St. John, the wife of our president, who, on several occasions, identified herself with the activities of the Club, and hospitably entertained members when excursions were held at the Botanic Gardens.

The sympathy of the Club was also extended to the family of the late Mr. A. J. Campbell, who, though not a member at the time of his death, in past years spared no effort to further its interests. Mr. Campbell's work as a distinguished Australian ornithologist is of world-wide reputation.

Attendances at our monthly meetings have been well maintained, the average for the year being 108. During the year it was found necessary to remove the exhibits not required for the lectures, to the lower hall, in order to provide more room upstairs. Papers and lectures were contributed by Miss I. Cookson, B.Sc., Messrs. A. D. Hardy, Tom Tregellas, P. R. H. St. John, F. Chapman, A.L.S., F.G.S.; J. A. Kershaw, F.E.S.; P. F. Morris; A. S. Kenyon, M.I.E., Aust.; R. H. Croll; C. Barrett, C.M.Z.S.; F. E. Wilson, F.E.S.; C. J. Gabriel; H. B. Williamson, F.L.S.; and S. Butler. The subjects were varied, dealing with many phases of natural history, including fossils, geology, birds, botany, marsupials, fish, insects, marine shells, native tribes, the Mallee, spiders and scorpions, ferns, and the Australian flora. The subjects were illustrated by specimens, drawings, lantern slides, and epidioscope projections.

The excursions during the year have been well attended, and the programme fully carried out. Forty excursions have been held, of which 25 were on Saturday afternoons, 12 on whole days or holidays, and three, extending over three days or more, to distant localities, such as Mallacoota Inlet, Flinders, and Walhalla. For the next syllabus of excursions, which dates from September 6, the committee will be pleased to receive suggestions regarding localities, and offers of leadership.

With this year our journal, *The Victorian Naturalist*, completes its forty-sixth volume. Difficulties in publication have been met and overcome, and under the able editorship of Mr. C. Barrett, C.M.Z.S., the customary high standard has been maintained. Articles on nearly all branches of natural history, many of them illustrated by excellent photographs and drawings, have been contributed by members and others. Members are again reminded that the honorary editor will always be pleased to receive suitable articles, nature notes, and paragraphs for publication.

The annual Wildflower Show was held in the St. Kilda Town Hall on October 2, and repeated the successes of former years. The show was opened by the Hon. A. E. Chandler, M.L.C., who is a noted cultivator of Australian wildflowers. Exhibits were staged from Queensland, South Australia, and Western Australia. From the latter State a particularly fine selection was collected and presented by the Shell Company of Australia, and was carried part of the way by aeroplane, arriving in excellent condition. The microscope section, under the direction of Miss J. W. Raff, M.Sc., was again a centre of attraction, as was also the room devoted to a collection of rare minerals, lent from the Geological Survey Museum, and marine specimens from the Mornington Field Naturalists' Society, under the direction of the Rev. Geo. Cox. Paintings of wildflowers by Miss A. Fuller, Miss G. Neighbour, and Mr H. P. Dickens were also displayed here. The attendance at the show was estimated at about 1700, and the net profits were £71.

During the year the Club has initiated, or been represented on, several deputations to members of the Government on matters which came within its scope, and were also of interest and benefit to the public generally. A request to place on the estimates a sum of money for the improvement of the reservation at Sperm Whale Head was sympathetically received, but owing to the prevailing financial stringency, no money was available. Favourable consideration was also promised to a request for the preservation of trees in the Cumberland Valley. A protest to the Government against the declaring of an open season for trapping opossums was unavailing. At the request of the Wild Life Preservation Society of Australia, the Club joined with it in approaching the Tasmanian Government to urge protection for the Thylacine or Marsupial Wolf, which was threatened with early extinction. As a result, this animal is now placed on the partly-protected list.

The committee thankfully acknowledges gifts of money for special purposes from Messrs. Miller Bros., A. E. Keep, W. M. Bale, and A. J. Tadgell. The thanks of the Club have also been extended to Mr. J. Searle for four stereoscopes, Mr. H. P. Dickens for a copy of his book on Victorian Orchids, the Hon. A. E. Chandler for two boxes of Boronia for sale at the Wildflower Show, and Mrs. V. H. Miller for providing refreshments for workers at the show. An artistic book-plate, embodying the Club's badge, *Correa rubra*, was chosen from designs drawn and presented by Mr. Quentin Sutton, the cost of printing being defrayed by Mr. A. E. Keep.

The committee again acknowledges with thanks the kindness of Messrs. Coghill and Haughton in placing their office at its disposal for holding meetings. Meetings have been held monthly, the attendances of members being as follow:—Messrs. J. Ingram, V. H. Miller, and A. E. Rodda, 12; P. R. H. St. John and H. B. Williamson, 11; Miss J. W. Raff, Messrs. G. Coghill and L. L. Hodgson, 9; Dr. C. S. Sutton, 8; C. Barrett, F. E. Wilson and C. Daley, 7; A. E. Keep, 6. Three meetings of the Jubilee Committee and three of the advisory sub-committee for the Jubilee have been held, and much preliminary work has been done.

In conclusion, your committee desires to express its thanks to members generally and all others who have contributed to the furtherance of the aims of the Club and the accomplishment of a successful year. It is confidently hoped that the incoming committee will have the benefit of the same loyalty and co-operation during the ensuing year.

P. R. H. ST. JOHN, President.
A. E. RODDA, Hon. Secretary.

FIELD NATURALISTS' CLUB OF VICTORIA.

Statement of Receipts and Expenditure for the Twelve Months Ended April 30, 1930.

RECEIPTS.

To Balance at Bank on May 1, 1929			1 11 5
„ Subscriptions—			
Arrears	£16 10 0		
Current	238 12 0		
In Advance	19 7 0		
		£274 9 0	
„ Wild Flower Show Receipts		157 6 3	
„ *Plant Census* Sales		9 4 3	
„ Reprints from *Victorian Naturalist*		0 8 6	
„ Cash Sales of *Victorian Naturalist*		16 17 7	
„ Advertisements in *Victorian Naturalist*		2 5 0	
„ Sale of Badges		4 2 9	
„ Donations		6 15 0	
„ Interest—			
Best Fund	£2 10 0		
Savings Bank Debentures	13 0 0		
Savings Bank current a/c.	6 10 11		
		22 0 11	
			493 9 3
			£495 0 8

EXPENDITURE.

By *Victorian Naturalist*—			
Printing	£208 6 6		
Illustrating	31 8 0		
Wrapping and Despatching	25 14 10		
		£265 9 4	
„ Wildflower Show Expenditure		88 0 0	
„ *Plant Census* Expenses		1 15 0	
„ Library a/c. Subscriptions		4 10 0	
„ General Printing		10 5 6	
„ Donations		5 5 0	
„ Postage, Petty Cash, and General Expenses		17 13 6	
			£392 18 4
„ Amount transferred to Savings Banks from proceeds of Wildflower Show			35 13 7
„ Balance at Banks on April 30, 1930—			
English, Scottish and Australian Bank		46 17 10	
State Savings Bank		19 10 11	
			66 8 9
			£495 0 8

Special Trust Account.

To Balance in Bank and Cash in Hand on May 1, 1929 ..	£20 1 3
	£20 1 3
By Expenditure in Year	£0 10 0
" Balance in Bank and Cash in Hand on April 30, 1930 ..	19 11 3
	£20 1 3

Statement of Assets and Liabilities on April 30, 1930.

ASSETS.

Arrears of Subscriptions, £87/12/6, estimated to realise, say		£30 0 0
Bank Current Accounts—		
E. S. and A. Bank, general account	£46 17 10	
State Savings Bank, general account ..	19 10 11	
		66 8 9
E. S. and A. Bank, Special Trust Account	13 0 3	
Cash in Hand, Special Trust Account ..	6 11 0	
		19 11 3
Investments—		
Best Fund—E. S. and A. Bank, fixed deposit	50 0 0	
State Savings Bank Debentures	200 0 0	
State Savings Bank, Current Account ..	137 13 7	
		387 13 7
Library and Furniture, insurance value		400 0 0
Plant Census Account, being difference between cost and sales of books		114 17 5
Club Badges on hand, cost less sales		5 15 5
Accounts owing to Club, Advertisements and Subscriptions		10 0 0
		£1034 6 5

LIABILITIES.

Subscriptions paid in advance		£19 7 0
Late Mr. Dudley Best Fund	£50 0 0	
" " " " " Interest in hand	2 10 0	
		52 10 0
Balance of Char-a-banc Fund		1 17 0
Special Trust Account		19 11 3
Outstanding Accounts—		
Rent	12 0 0	
Caretaker	1 10 0	
Printing—April	27 10 7	
		41 0 7
		£134 5 10

Examined and found correct on May 30, 1930.

A. S. BLAKE,
A. G. HOOKE, Hon. Auditors.

JOHN INGRAM, Hon. Treasurer.

THE FIELD NATURALISTS' CLUB OF VICTORIA, 1920-1930.

By F. G. A. Barnard.

(Read before the Field Naturalists' Club of Victoria, June 2, 1930.)

Twenty-five years ago, as president of our Club, I chose for the subject of a presidential address, "The First Quarter of a Century of the Field Naturalists' Club of Victoria." This appeared in the *Naturalist* for July, 1906 (V.N. xxiii., p. 63). In that address I gave rather fully the details of the founding and first year's history of the Club, 1880-1; but after that referred only to the more important happenings.

In April, 1920, it was suggested that, as gaps were occurring among those who had borne the burden and heat of the day, a continuation of the history would be acceptable, so in May, 1920, I continued it as far as the end of its fortieth year (published in the *Naturalist* for October, 1920, vol. xxxvii., p. 71). To-night I want you to bear with me for a little while, and allow me to add the events of the additional ten years to the end of April last, and so complete the story of its half-century.

I take it as somewhat unique that I have personally been witness of all I have told and will tell you, and not as many historians are, compilers from other persons records.

When I gave the second part of our history I felt that life was too uncertain to promise the completion in ten years' time, but I have been spared, and I trust you will accept my remarks in the spirit in which they are offered to you.

I will continue on the lines of the previous parts, simply recording the names of the president and honorary secretary for each year, with the principal happenings.

1920-21.—At the first meeting of the year (May), the fortieth anniversary of the Club was celebrated by a special reunion of members claiming longest membership of the Club, and it was pleasing to find that of the "original members," then reduced to eight, seven were present; the eighth, Mr. T. G. Sloane, is a resident of Young, New South Wales. The six present were Messrs. W. M. Bale, F. G. A. Barnard, D. Best (since deceased), J. E. Dixon, C. French, senr., F. Pitcher, and F. Wisewould (since deceased). Of the 30 members then on the roll, other than the "original members," upwards of 20 years' standing, eleven were present, while apologies were received from five others unable to be present for various reasons (V.N. xxxvii., p. 10). A presentation was made to Mr. G. Coghill in recognition of his services as honorary treasurer for a period of 15 years. Mr. F. G. A. Barnard (honorary editor) read a brief sketch of the Club's activities from 1905 to 1920 (V.N. xxxvii., p. 71). For this year Mr. Joseph Gabriel was elected president, with Mr. R. W. Armitage as honorary secretary (V.N. xxxvii., p. 48). The report for the year (V.N. xxxviii., p. 18) gives a total membership of 259. Among the deaths recorded was that of Mr. R. A. Bastow, foremost as a worker in mosses and lichens. Only 10 papers were read, partly due to the fact that four monthly meetings had to be abandoned owing to industrial troubles causing restriction of lighting and traffic facilities. The balance sheet showed a reduction in the credit balance of the Club. The Wildflower Exhibition was again a great success, and enabled a further sum of £66 to be set aside towards the publication of the *Census of Victorian Plants*, then nearing completion. An excursion was again made to Bendigo, and in January, 1921, Walhalla was visited. The continued export of natural history specimens created considerable discussion, and the Club decided to express its opposition to the practice to the Fisheries and Game Department, and also to thank the same Department for its action in endeavouring to reduce the number of foxes at Phillip Island, where the mutton-birds were in danger of destruction. The president, Mr. J. Gabriel, made a presentation to the Club of a reading desk of his own construction. On his approaching departure from the Commonwealth, the Governor-General, Sir Ronald Munro-Ferguson, G.C.M.G., forwarded a letter to the Club expressing his regret at not having been able to be present at more of its excursions, and wishing the Club every success (V.N. xxxvii., p. 58). In the February *Naturalist*, Sir Baldwin Spencer, K.C.M.G., F.R.S., etc., contributed an important article entitled "The Necessity for an Immediate and Co-ordinated Investigation into the Land and Freshwater Fauna of Australia and Tasmania," but, unfortunately, the matter has so far not been taken up.

1921-22.—The president for this year was Mr. F. Chapman, A.L.S., with Mr. C. Oke as honorary secretary. The annual report (V.N. xxxix. p. 26) recorded a membership of 282. Fourteen papers had been read, and there was a credit balance of £219. A Nature Study Exhibition was held in conjunction with the Microscopical Society in June, in the Melbourne Town Hall (V.N. xxxviii., p. 28), which was opened by the State Governor, Lord Stradbroke. The exhibition was well attended, and each society added £23 to its funds. At a special meeting, in August, an alteration in the rules was made whereby the retiring president in each year became an *ex-officio* member of the new committee. Later on, in the same evening, August 8, 1921, a slight earth-tremor was distinctly felt by some of those present. Bendigo was again visited in October. The October meeting was devoted to a memorial of the late Baron Sir F. von Mueller, whose death had occurred just 25 years previously (V.N. xxxviii., p. 58). At this Mr. C. Daley, F.L.S., gave some biographical notes, Mr. E. E. Pescott, F.L.S., some account of his literary work, and Mr. F. G. A. Barnard described his explorations in Victoria, etc. The annual Exhibition of Wildflowers was held at the Athenaeum in September, when Lady Stradbroke performed the opening ceremony, and the result was an addition of £150 to the Club funds. An attempt was made to obtain, by ballot, the six most popular native flowers (V.N. xxxviii., p. 63). Among the excursions of the year was a very interesting one to Eltham Heights, where Mr. W. Tonge dealt with the birds of the district. At the December meeting Mr. A. J. Tadgell made a valuable contribution to the records of the flora of the Alps (V.N. xxxviii., p. 105). At the January meeting, Mr. A. H. S. Lucas, M.A., of Sydney, the first editor of the *Naturalist* and now an honorary member, was present and given a cordial welcome. An extended excursion to Toolangi was made at Easter (V.N. xxxix., p. 45).

1922-23.—For this year Mr. C. Daley, B.A., was elected president, and Mr. C. Oke as honorary secretary. The annual report (V.N. xl., p. 37) showed a membership of 303, with an increased credit balance. In May an enjoyable excursion was spent in the Macedon district (V.N. xxxix., p. 13). At the June meeting the retiring president, Mr. F. Chapman, A.L.S., gave an interesting address on the physiography of the Southern Coast of Victoria (V.N. xxxix. p. 31). Later in the month the Club held a Nature Study Exhibition in the Athenaeum (V.N. xxxix., p. 47). This was opened by Sir Baldwin Spencer, K.C.M.G., and proved very interesting. Portion of the proceeds was handed to the Children's Hospital. In July, Mr. Wm. Stickland, a very old member of the Club and an enthusiastic pond-life man, passed away. He was soon followed by Mr. F. P. Spry (V.N. xxxix., p. 60), a great worker in entomology, as also in palaeontology; unfortunately he could not be persuaded to put his knowledge into print. The Bendigo excursion of this year was one of the most successful of the series. The Wildflower Exhibition was again held at the Melbourne Town Hall, and was opened by Sir Robert Best (V.N. xxxix., p. 80). The public attended in large numbers, with the result that the Club and the Children's Hospital shared £150 between them.

In November, Mr. J. Gabriel, who for some months had been in failing health, passed away, the Club losing one of its greatest workers. He had been a member for nearly forty years. and had held office for 27 years (V.N. xxxix., p. 101).

In view of his great services to the Club, a special minute was inserted in the proceedings (V.N. xxxix., p. 109). In December the Club sustained another loss by the death of Mr. J. R. Tovey, who, through his association with the National Herbarium, had made many friends among the botanists of the Club. At the January (1923) meeting, on the recommendation of the committee, Mr. Chas. French, senr., one of the founders of the Club, was unanimously elected an honorary life-member in view of his long membership and services to the Club. In January, 1923, an extended excursion was made to Torquay, and an interesting time spent (V.N. xxxix., p. 153). At the February meeting the committee recommended that the seven other "original" members of the Club be elected honorary life-members, in recognition of their many services to it. In March further reference was made to the export of natural history specimens, especially birds, from Australia.

1923-24.—Mr. C. Daley, B.A., was again president, while Mr. C. Oke continued as honorary secretary. The members' roll showed a further increase, but the increased cost of printing the *Naturalist* allowed little increase in the credit balance of the Club. With the report is given (V.N. xl., p. 43) a summary of the cash results of the last seven Wildflower Exhibitions, showing that £640 had been given to war and charitable funds, while £338 was divided between the Club funds and the fund for publishing the *Census of Victorian Plants*. At the May meeting it was decided to ask the Comptroller of Customs to consider the question of the export of live birds from Australia, and to frame regulations to deal with the matter. At the September meeting great regret was expressed at the death of Mr. W. H. Dudley Le Souef, C.M.Z.S., a well-known naturalist and traveller, and the Director of the Melbourne Zoological Gardens. He had been a member for a long period, and had held office at various times (V.N. xl., p. 105). The long-promised *Census of Victorian Plants* (V.N. xl., p. 119), the result of many years' labour by the members of the Plant Names' Committee, was made available at the Wildflower Exhibition, held at the Melbourne Town Hall on October 3, 1923 (V.N. xl., p. 127), and met with a ready sale. The profit of the Exhibition amounted to £107, of which £53 was handed to the Bush Nursing Association, in recognition of its help in securing exhibits from country districts. Morroco-bound copies of the *Census* were presented to each member of the Plant Names' Committee, in recognition of the completion of their long and difficult task. The constitution of the Advisory Committee on the Exportation of Australian Mammals and Birds is given in the November *Naturalist* (V.N. xl., p. 139). Wilson's Promontory was visited at Christmas by a party of 16, under the leadership of Mr. C. Daley, B.A. (V.N. xl., p. 212). A list of the presidents of the Club, 1880-1924, appeared in the *Naturalist* for April (V.N. xl., p. 246). The April meeting was devoted to a display of microscopical objects.

1924-25.—The presidential chair was occupied by Mr. J. Searle, with Mr. C. Oke as honorary secretary. The report for the year gives 244 as the number of members. Thirteen papers were read, in addition to which three lectures were given. The income for the year was £399, while the expenditure amounted to £337. Early in the year, Mr. J. B. Walker, a member of the club, the remaining partner in the printing firm of Walker, May and Co., the printers of the *Naturalist*, died, as the result of a motor accident in the city. When his executors took over the business they decided to offer it for sale. The firm was one of the oldest letterpress printers in Melbourne, having been established in the early fifties. The Club had dealt most cordially with the firm for more than 35 years. The *Naturalist* for August (No. 488) was the last printed by Walker, May and Co. The firm had studied the Club in every way, and the journal as turned out by it could hold its own for quality of production in any city of the Commonwealth. The choice of a new printer fell on the Ramsay Publishing Co. The cost of printing had increased. At the October meeting reference was made to the death, at an early age, of Mr. L. B. Thorn, an enthusiastic lepidopterist, who was doing good work; also to the passing away of Mr. G. R. Hill, a very old member of the Club dating from 1884.

The Wildflower Exhibition was held late in October, and was very successful. From it the Bush Nursing Association received £55, and the Club funds were enriched by the same amount (V.N. xli., p. 149). The seventh annual excursion to Bendigo took place in October. At the November meeting it was decided to call the attention of the Forests Department to the destruction of beeches taking place at Loch Valley, while in January it was decided to communicate with the Fisheries Department re fixed lines in the Goulburn River (V.N. xli., p. 186). These are mentioned in order to show that the Club has a watchful eye regarding natural history in all its aspects. In January, the fifth Club visit to Wilson's Promontory was successfully carried out (V.N. xli., p. 204). In March a special meeting was held to consider an increase of five shillings in the subscription for ordinary members, owing to increasing expenditure, principally in connection with the production of the *Naturalist*. The proposal was adopted without question. At the same meeting Mr. F. G. A. Barnard tendered his resignation as editor of the Club's magazine, after a service of over 32 years (V.N., xli., p.

217). This the meeting decided it could not do otherwise than accept, Mr. Barnard offering to carry on to the end of the current volume. At the request of the meeting, Mr. Charles Barrett, C.M.Z.S., undertook the editorship, commencing with the first number (May) of Volume xlii.

1925-26.—The president for the year was Mr. G. Coghill, one of the oldest members of the Club, while Mr. C. Oke continued the secretarial duties. The report for the year recorded the membership as 254. Eleven papers had been read, and in addition two lectures and an address had been given. The June *Naturalist* contained "A Record of Service," referring to Mr. F. G. A. Barnard (with portrait), and at the August meeting a presentation was made to him in recognition of his many services to the Club. At the July meeting a protest was carried with regard to the removal of trees in Victoria Parade to provide space for a tram line. The usual Exhibition of Wildflowers was, owing to the Melbourne Town Hall being in course of reconstruction, held in the St. Kilda Town Hall, which was found very suitable for the purpose. The show attracted a large number of visitors. The result was that £55 was handed to the Bush Nursing Association, while the Club benefited to the extent of £57. By the death of Mr. J. H. Maiden, I.S.O., F.L.S., of Sydney, in November, the Club lost a good friend, who was always ready to send parcels of New South Wales flowers for the Club's exhibitions (V.N. xlii., p. 192). Another excursion, the sixth, was made to Wilson's Promontory in January, with much success (V.N. xlii., p. 256). In April it was decided to take steps to secure the reservation of 3500 acres of land, at Sperm Whale Head, near the Gippsland Lakes entrance, as a National Park (V.N. xliii., p. 1).

1926-27.—For this year Mr. E. E. Pescott, F.L.S., was president with Mr. L. L. Hodgson as honorary secretary. The report shows a membership of 320, and a credit balance of nearly £200. The *Naturalist* for the year, Vol. XLIII., was the largest yet issued, numbering 364 pages. For the Easter excursion a visit was paid to the Hopkins River, at Warrnambool, with fair results (V.N. xliii., p. 3). One of our oldest members passed away in May, after a lengthy illness, in the person of Mr. G. A. Keartland, who had been a very enthusiastic member, always keen on the protection of birds. A splendid portrait appeared in the *Naturalist* (V.N. xliii., p. 48), accompanied by an appreciative memorial notice written by Sir Baldwin Spencer An Orchid Section of the Club was formed in June. August saw another change in the printing of the *Naturalist*, the Ramsay Publishing Co. giving place to the Horticultural Press. The annual Exhibition of Wildflowers was again held at the St. Kilda

Town Hall. From the proceeds £25 was handed to the Children's Hospital, the Club's share being about £100 (V.N. xliii., p. 198). The announcement at the December meeting of the death of Mr. Frank Wisewould, one of the "original" members, was received with very great regret. Mr. Wisewould had been an office-bearer for many years and took a lively interest in the Club's activities (V.N. xliii., p. 292). The Christmas excursion was a successful exploration of the gorge of the Mitchell River, in the parish of Glenaladale (V.N. xliii., p. 297). At the January meeting a copy of Dr. Tillyard's *Insects of Australia and New Zealand* was received as a present to the Club from Mr. T. G. Sloane, of Young, New South Wales, one of the "original" members of the Club. At the February meeting attention was called to the increasing use of pea-rifles, and the consequent destruction of birds, and an effort was made to get their use prohibited. The February meeting was devoted to an exhibition of aquatic life of various descriptions (V.N. xliii., p. 312). A three days' excursion was held at Warburton in January (V.N. xliii., p. 314). In February an excursion was made to Killara, near Woori Yallock, where a recently discovered fossiliferous mudstone afforded many interesting specimens, while five days were spent at Toolangi at Easter (V.N. xliv., p. 51).

1927-28.—Mr. E. E. Pescott, F.L.S., as president, and Mr. L. L. Hodgson as honorary secretary, were re-elected to their respective positions. The report for the year gives the membership at 374, the highest number yet attained. The announcement that the reserve at Sperm Whale Head had been gazetted as a National Park was received with satisfaction. At the June meeting it was announced that an anonymous friend had, through Mr. (now Senator) R. D. Elliott, placed £200 at the disposal of the Club for the purpose of making further researches into the fauna and flora of distant parts of the State (V.N. xliv., p. 54). A Natural History Exhibition was held at the Melbourne Town Hall in June, and was well attended. The September meeting of the Club was held at the Queen's Hall, Collins Street, in order to receive the report of the committee appointed to consider the question of the disappearing tea-tree along the eastern shore of Port Phillip, and to bring the matter under the notice of the general public (V.N. xliv., p. 122). At the November meeting Mr. V. Miller presented a copy of the *Australian Encyclopoedia* to the Club's library, while earlier in the year he had presented a type-writer for the use of the honorary secretary. In recognition of these and other services, Mrs. V. Miller was elected an honorary life-member at the January meeting. At the November meeting it was decided to make a vigorous protest against saw-milling in the upper portions of the Yarra Valley (V.N. xliv., p. 206). The December *Naturalist* stated that the new badge, an enamel representation of the Red Correa, was ready for use by members, and on the cover of the January *Naturalist* it replaced the shell so familiar for many years.

The Exhibition of Wildflowers was held at the St. Kilda Town Hall on September 27, Lord Somers, the State Governor, performing the opening ceremony. At Christmas another excursion was made to the National Park, Wilson's Promontory, the Sealer's Cove portion being thoroughly explored, with many gratifying results (V.N. xliv., p. 303). Phillip Island was visited at the Foundation Day holiday. At the March meeting it was announced that an Advisory Council, to act with regard to the preservation of the native fauna and flora, with Dr. J. A. Leach as chairman, had been appointed by the Government (V.N. xliv., p. 321). A splendid donation was made to the Club's library by Mr. Wm. Lawford, of Benalla, a non-member, of a set of 12 morocco bound volumes of Mathews' *Birds of Australia* (V.N. xliv., p. 321). An Ethnological Section of the Club was formed in December. In February a dredging excursion was tried with fair success, and in April the Easter excursion was held at Forrest, Cape Otway Ranges, for several days (V.N. xlv., p. 11), under the leadership of Mr. H. B. Williamson, F.L.S. At the April meeting a distinguished visitor, Dr. T. D. Cockerell, of the University of Colorado, U.S.A., a well-known entomologist, was present, and heartily welcomed.

1928-29.—The president for the year was Mr. F. E. Wilson, F.E.S. Mr. L. L. Hodgson continued as honorary secretary, but his heath failing early in 1929, Mr. A. E. Rodda consented to act as secretary until the annual meeting. The report showed a slightly increased membership. A new edition of the *Plant Census* was announced in May, and Mr. H. B. Williamson, F.L.S., who had rendered very valuable service in thoroughly revising and bringing it up-to-date, was presented with a specially morocco-bound copy as a memento of his work. At the same meeting Senator R. D. Elliott was elected an honorary life-member, in recognition of his services to the Club. Mr. V. Miller added to his previous kindnesses by presenting to the Club a cabinet constructed of Queensland maple, specially made to contain the set of Mathews' *Birds of Australia*, recently presented by Mr. Wm. Lawford, of Benalla (V.N. xlv., p. 30). At the June meeting the death of Mr. Dudley Best was announced as having occurred suddenly on the previous day, June 10, 1928.

Mr. Best was one of the founders of the Club, and its first honorary secretary. He was an ardent coleopterist, and though eighty-four years of age, had, in recent months, frequently been present at the monthly meetings (V.N. xlv., p. 104). Mr. Best left the sum of £50 to the Club, the first legacy it had received. This the committee decided to set aside as the "Best Fund," to be invested and the resulting interest used for library purposes (V.N. xlvi., p. 61). The June meeting was devoted to the report of the special excursion to the Western District, made in the previous October. This was subsequently published as a supplement to the October *Naturalist.*

At the July meeting, Mr. Wm. Lawford, of Benalla, was, on the recommendation of the committee, unanimously elected an honorary life-member, in recognition of his valuable donation to the Club's library. Another excursion was made to Bendigo in October. The annual Exhibition of Wildflowers was held in the St. Kilda Town Hall on October 2, with the usual success. Of the proceeds, £17 was forwarded to the Lord Mayor's Fund, earmarked for the Austin Hospital (V.N. xlv., p. 182). At the January meeting, a copy of his latest work, *Wanderings in Wild Australia,* was received from the author, Sir Baldwin Spencer, K.C.M.G., for the Club's library. A very successful "camp-out" was held at the end of January at Cape Woolamai (V.N. xlv., p. 281). A letter of congratulation was sent to an absent member, Sir A. E. Kitson, K.B.E., Director of the Geological Survey of the Gold Coast, Africa, on his election as president of the Geological Section of the British Association for the Advancement of Science, a very high honour for a Victorian-trained geologist. In view of his approaching marriage, a presentation was made to Mr. A. C. Hooke, honorary treasurer for the past five years, in recognition of his valuable services.

1929-30.—Mr. P. R. H. St. John was elected president for this year, with Mr. A. E. Rodda again as honorary secretary. At the annual meeting in June, a presentation of a barometer was made to Mr. L. L. Hodgson, in recognition of his services as honorary secretary for two and a half years. The Ethnological Section reported steady progress for the year. At the July meeting, on the recommendation of the committee, Sir Baldwin Spencer, K.C.M.G., then making anthropological studies in Patagonia, South America, was elected an hon. member in view of his many services to the Club, especially in its early days, but, unfortunately, did not live to learn of the honour bestowed upon him, for at the August meeting his sudden death was announced, which had taken place just six days after his election as an honorary member. A brief sketch of his life, along with a portrait, appeared in the *Naturalist* for September (V.N. xlvi., p. 102) from the pen of Mr. J. A. Kershaw, C.M.Z.S. At the September meeting it was decided to congratulate Mr. C. French, the remaining founder of the Club, on the attainment of his ninetieth birthday. In September, Mr. A. J. Campbell, a former member of the Club, well-known as an oologist and ornithologist, died after a long illness. Early in October, Dr. J. A. Leach, one of the leading ornithologists of Australia, passed away after several months' illness. As late as the previous March he had given a most interesting evening on "Australian Swans, Ducks and Geese." The Wildflower Exhibition was again held at the St. Kilda Town Hall on October 2, being opened by the Hon. A. E. Chandler, M.L.C. The result was a profit of £71 (V.N., xlvi., p. 163). With the November number, the printing of the *Naturalist* was transferred to Messrs. Mitchell and Casey Pty. Ltd. The Christmas excursion was made to Mallacoota (Eastern Gippsland), when interesting work was done (V.N. xlvi., p. 209). At the March meeting it was reported that it was probable that the protest against the opening of the Cumberland Valley (Upper Yarra) for saw-milling would be successful. During the last two years new localities for excursions had been tried in Kinglake West, and the country west of Macedon with gratifying results.

Now my task of recording the more important items of the last 10 years is completed, but I wish to make a few general remarks.

That a great many of the persons elected during the 50 years have been faithful to the Club may be seen from the following particulars obtained from the members' roll for the last year. Of the "original" members elected June, 1880, six are still members; of those elected between that date and May 1, 1890, there are 11; of the next decade, seven remain; of those with over 20 years' membership, there are 33, while those who can claim between 10 and 20 years' membership number 52.

To my mind, one of the distinguishing features of the Club's history has been the very great interest its office-bearers have taken in its progress right through the half century. Some idea of the amount of time devoted to the Club's affairs may be gained from the following record of years of service by certain members:—Messrs. F. G. A. Barnard, 42; G. Coghill, 35; J. A. Kershaw, 28; J. Gabriel, 25; Dr. C. S. Sutton, 22; Messrs. C. French, senr., 18; F. Pitcher, 18; D. Best, 16; F. Wisewould, 16; A. D. Hardy, 16; P. R. H. St. John, 15; Dr. T. S. Hall, 14; Messrs. G. A. Keartland, 14; F. Chapman, 14; C. Daley, 13; O. A. Sayce, 13; D. Le Souef, 12; J. Searle, 12; C. L. Barrett, 11; A. H. S. Lucas, 10; J. Shephard, 10; H. T. Tisdall, 10.

In the previous parts of the 50 years' history I tried to present by means of figures the progress of the Club. I find, in the last statement of receipts and expenditure, I did not include the figures relating to the Wildflower Exhibition, 1915-1919 inclusive. These are now included, consequently the figures are somewhat larger than they would have been had the ten years only been added.

A rough balance sheet for the 50 years, giving even pounds only, reads as follows:—

Receipts.

Subscriptions	£6909
Naturalist, Sales, etc.	944
Interest, etc.	266
Conversaziones	87
Wildflower Exhibitions	2669
Natural History Exhibition	176
Census Sales	134
Total	£11,185

Expenditure.

Naturalist, Printing and Illustrating	£5528
Rooms and attendance	598
Library	484
Management (secretary, expenses, etc.)	1733
Conversaziones	201
Expenses Wildflower Exhibitions	829
Expenses Natural History Exhibitions	89
Census, printing	177
Donations to War Funds and Charities	901
Total	£10,540

From the foregoing it will be seen that the *Naturalist* has cost just about half the total receipts of the Club, but has it not been justified? Without a magazine the Club could not have lived for 50 years. The expense is not to be wondered at when you consider that our journal now costs almost one pound per page to print, as against five shillings for many years after it was first started—so much for Arbitration Court wages.

Had it not been for the fine results obtained from the Wild-flower Exhibitions since a charge was made for admission, the Club would have had to cease publishing. For the fifteen years, 1915-29 inclusive, these resulted in a credit balance of £1840, of which £621 was given to War Funds, £281 to other charities, the *Census* absorbed £177, and the balance (£790) helped the Club funds.

Regarding the work accomplished by the Club during the 50 years, it may be mentioned that about 1150 papers have been placed before the members. Naturally, all have not been of equal value. Many very informative and useful papers have been read, while others describing localities, etc., have proved of use to other members engaged on various investigations. Turning to the *Naturalist*, I find 556 numbers have been issued at a cost of £5528, and this, if it has done nothing else, has certainly assisted to provide employment in the printing trade. That the Club has filled a place in the scientific and social activities of the State cannot be overlooked. Its aspirations, such as the protection of birds, the securing of reserves, have in many instances been accomplished, while not the least of its efforts has been the reservation of Wilson's Promontory as a National fauna and flora reserve. This was essentially a Club project, and is undoubtedly a lasting memorial to the late Professor Spencer and others, alas! now no more.

Before I say my final word, I would like to take advantage of the occasion to urge the committee to consider the inauguration of an "Endowment Fund." Glancing at recent financial statements many entries of "donations" are noticed. If these were set aside and invested, and only the interest obtained used for the necessities of the Club, many persons might be induced to make donations, or leave bequests, the income from which, in course of time, would help considerably to provide funds for various activities.

Long may the Club continue to afford nature-lovers that comradeship, which is so necessary in these days of whirl and worry, and, at the same time, keep a watchful eye on those who desire too eagerly to exploit our fauna and flora for purposes of gain.

I trust that some of those present to-night will live to see the seventy-fifth year of the Club, if not its centenary.

SOME PLANTS OF THE NORTHERN MALLEE.

(Part IV.)

BY H. B. WILLIAMSON, F.L.S.

Stipa scelerata, Behr. (*S. setacea*, R.Br., var. *latifolia*, Bth.).

Ribbed Spear-grass. A coarse, robust grass, 2 to 3 feet high, nearly glabrous, with broad, prominently ribbed leaves finally inrolled. Ligule like that of *setacea*, about 2 lines long, glabrous and jagged at the summit. Outer glumes about 2 lines long. Awn slender, pubescent, about 2 inches long. Berook, about 40 miles north-west of Murrayville. H.B.W., October, 1928. Occurs in South and Central Australia; not previously recorded for Victoria.

THE GENUS *FRANKENIA* (SEA-HEATHS).

A group of small, heath-like herbs or shrubs giving the name to the family *Frankeniaceae*, which contains besides *Frankenia*, 4 other genera, each with only one or two species, and not represented in Australia.

The Genus is characterised by its opposite leaves, more or less revolute at the margin, the stipules of each pair being united into a sheath often fringed. Flowers are sessile and often solitary, with sepals usually united into a tube, and petals with a claw enclosed in the tube, and spreading white or pink lamina.

Specimens of *F. pauciflora* for study may be obtained near Melbourne in salt marshes among the Glassworts, *Salicornia*, *Arthrocnemum*, etc., from Coode Island to Altona and beyond.

In the *Flora Australiensis*, 7 species are recognised, 6 of which are recorded as endemic in West Australia, while all the other forms occurring in Australia are included under *F. pauciflora*, DC., with the reservation that its varieties *serpyllifolia* and *thymoides* "may prove sufficiently constant to be admitted as species."

In 1928 Ostenfeld dealt with the West Australian species, adding four new ones, while J. M. Black (*Trans. Roy. Soc., S.A.*, XLII.) treated the South Australian forms in a similar manner, recording three new species there.

A complete revision of the Australian species by V. S. Summerhayes, B.Sc., London, has now been published in the *Journal of the Linnean Society* (April, 1930). This is based on the examination of all specimens at Kew, British Museum, Berlin and Copenhagen, and the entire collections of Adelaide, Brisbane and Perth, as well as duplicates from Sydney, Melbourne and Hobart, and as a result it has been shown that 13 different species have been included under *F. pauciflora* and 8 under *F. serpyllifolia*, and that the total number of Australian species amounts to 45, including *F. pulverulenta*, L., which must be regarded as an introduced alien not yet naturalised, and regarding which the author of the revision says: "All the evidence points clearly to this species being an occasional introduction into Australia. The localities recorded are busy ports or much-frequented places, and even there the plant seems to occur sporadically. When one bears in mind the wide distribution of the species, the annual habit and the enormous seed production, the fact that Baudin discovered it at Port Jackson so early as 1801 need cause no surprise, since Sydney was founded 13 years before. If native, it is very remarkable that it has not been found there again; in addition, the locality is nearly 500 miles from the nearest station along the coast (Port Albert) for any Frankenia."

The plant has been recorded from Geelong, 1908 (H.B.W.); Port Pirie, 1901 (Koch); Norfolk Island, 1902 (Maiden). The Geelong specimen was taken quite close to the wharf, where many plants introduced by ballast being unloaded make their appearance. It is a prostrate annual easily known by its small, broad petiolate leaves. Four species are shown to occur in Victoria as indigenous, three of which are found only in the north-west district. During my last visit to Mildura and Murrayville, I was able to procure good specimens for investigation. In the light of the recent revision, the following key gives the position of the Victorian species:—

A. Leaves narrowed into a distinct stalk; stalk and stipular sheath ciliolate; ovules numerous *F. pauciflora*, 1
   Leaves almost sessile; sheath not ciliolate; ovules numerous or few B

B. Leaves crowded, very small (about 1 line), sessile on a broad base, midrib concealed; ovules few *F. sessilis*, 2
   Leaves 2-3 lines long almost sessile, midrib visible C

C. Leaves sessile, all narrow; bracteoles narrow, similar to the leaves; ovules numerous *F. foliosa*, 3
   Leaves stalked, lower ones broadish; bracteoles broad, stalked; ovules 3-5 *F. angustipetala*, 4

Although the author of the revision considers that the disposition of the ovules, whether distinctly parietal, numerous and erect on the placentas, or basal, with a few ovules on long, bent funicles, as untenable for a division of the genus into sections as adopted by Ostenfeld and Black, still the arrangement of the ovules is shown to be a valuable test in separating species, otherwise morphologically similar.

1. *F. pauciflora*, DC. Common Sea-heath. A shrubby plant common in salt marshes around Port Phillip Bay, Corio Bay and Westernport. The leaves are almost terete, channelled below, about 3 lines long, rather pointed, almost glabrous, and narrowed into a short stalk which, with the stipular sheath, is provided with short, white cilia. Mueller at one time considered it identical with, or very close to the European *F. laevis*, L. Our plant is the variety *Gunnii*, Summerh., with shorter leaves, somewhat pubescent above, and smooth seeds, ,compared with the typical form which occurs only on the coast of West Australia from Shark Bay to the Swan River. It (var. *Gunnii*) has recently been sent in from Sperm Wale Head, F. Barton, junr., the most Eastern locality for any indigenous Frankenia.

2. *F. sessilis*, Summerhayes. Small-leaved Sea-heath. A very small diffuse shrub with short and thick crowded leaves about 1 line long, usually ashy-encrusted, and somewhat resembling small wheat grains owing to the margin being so closely revolute that there is merely a channel below. The flowers are white, smaller than any other Victorian species (about 2 lines across). This is the plant discussed by Black in *Trans. Roy. Soc., S.A.*, Vol. XLI., under the heading *F. fruticulosa*, DC, and described by him later in the same journal (Vol. XLII., p. 178) under the same heading; but Summerhayes has shown that *F. fruticulosa*, DC, is identical with a variety of *F. pauciflora* from South Australia, which he has named var. *fruticulosa*. Dimboola (D'Alton, Reader Walter and others), Murrayville (H.B.W., 1928). Extends to West Australia through South Australia.

3. *F. foliosa*, J. M. Black. Pink Sea-heath. An erect, dwarf ashy-grey shrub, about 8 inches in height, with bright pink flowers and spreading sessile leaves not closed below, in clusters not so closely set as in *F. sessilis*. The bracteoles round the calyx resemble the leaves, being narrow and sessile. Sea Lake (W. W. Watts), Lake Tyrell (Reed), Mildura (H.B.W., 1928), also in New South Wales and South Australia.

4. *F. angustipetala*, Summerhayes. Thyme Sea-heath. This plant has flat leaves varying from linear in the upper to ovate or elliptical in the lower ones, with revolute margins. It has been placed by Black under *F. serpyllifolia*, Lindl. (*pauciflora*, DC, var. *serpyllifolia*, Bth), but that it is a hairy plant with al-

most capitate stigmas, growing in South and Central Australia and the south-west of Queensland, Mallee country (Reader, 1896: Walter, 1898), Murrayville (1928, H.B.W.), also in the west of New South Wales.

In concluding this series of articles, I desire to acknowledge the help of the Council for Scientific and Industrial Research, whose grant for field work during 1928 enabled me to search over a very wide range, including the country round Murrayville, Cowangie, Pink Lakes, Gypsum, Mildura, No. 9 Lock, Kulkine, Nowingi, and the Raak, and to obtain a large quantity of material for study and for adding to the National Herbarium and the University Herbarium. I am also indebted to Messrs. Shillinglaw and Oakey, of the Forests Department at Mildura, for their valuable co-operation in my work.

RANGE OF "RED RAIN."

At the meeting of the Geological Society of London, on March 26, Professor J. W. Gregory exhibited a sample and slides of the dust which fell in "red rain" in New Zealand, between October 6 and 10, 1928. This was described by Professor Gregory and Dr. Kidson, in *Nature* (March 15, 1930), and the former quotes from the *Victorian Naturalist* (Vol. XX., 1903), the paper on Victorian Red Rain, written by F. Chapman and H. J. Grayson. Professor Gregory remarked that: "The 'red rain' of Victoria and New Zealand of 1903 had been shown from its diatoms by Chapman and Grayson to have been derived from the salt lakes of the interior of Australia. The recent occurrence in New Zealand was of especial interest from the large quantity that fell, which is estimated by Dr. Kidson as over 200,000 tons. The diatoms exhibited under the microscope resembled *Stauroneis*, and others were like *Pinnularia*—resembling those of the New Zealand rain described by Chapman and Grayson."

JUBILEE DINNER.

The Club's Jubilee Dinner is to be held on July 16, at 7 p.m., at the St. Kilda Town Hall. Tables for two, four, six or eight persons may be reserved on application to Mr. V. H. Miller ('phone, Windsor 7730). Members are asked to note that ordinary dress will be worn. Applications for tickets (price, 7/6) should be made as soon as possible to the honorary secretary, Mr. Rodda.

At the Club's Natural History Exhibition, assistance from members is needed in staging exhibits, watching them, and cleaning up. Those willing to help are asked to notify the honorary secretary.

SPIDER LIFE ON NULLARBOR PLAIN.

While insect life, consisting chiefly of small moths, was most abundant on the Nullarbor Plain, during its "spring-time" after the wonderful rains, spiders claimed more attention from a roving naturalist.

In May, 1930, when I visited many parts of the treeless plain, much of the "loose" water had disappeared, and the big "washaway" lake, west of Forrest, had shrunk to the size of a minor lagoon. Moths rose in thousands as I walked amongst the wild flowers, which, for a brief season, were lighting "the desert's dusty face" and flaking the limestone with colour—yellow and crimson and butterfly-blue, with the purple of *Solanum* here and there. White bell-flowers of the Austral Tobacco, *Nicotiana suaveolens*, open and fragrant at night, attracted those hosts of little brown moths, which sheltered chiefly in the daytime.

Spiders seemed to live everywhere. Under stones—large and small travertine boulders—I found some kinds; others among bushes, in the blow-holes, and still other species dwelling in the twilight or utter darkness of caves. The dainty and brilliant little *Lampropodous scintillans*, Rainbow and Pulleine, ran swiftly in sunshine over bare ground, and dodged into shelter. It was as quick upon its ways as a tiger-beetle.

My collection, containing representatives of 10 families, was submitted to Mr. V. V. Hickman, B.Sc., of Launceston, Tasmania, to whom I am indebted for the following notes:—

"The collection of spiders from the Nullarbor Plain contains several interesting forms, but owing to many of them being immature, it has not been possible for me to identify all the species with certainty. The collection contained 28 specimens, representing 14 species of no less than 10 families:—Ctenizidae (1 species), Barychelidae (1 sp.), Dysderidae (1 sp.), Agelenidae (2 sp.), Zodariidae (2 sp.), Lycosidae (1 sp.), Dictynidae (1 sp.), Theridiidae (2 sp.), Drassidae (2 sp.), Clubionidae (1 sp.).

"Among those species which could be identified with certainty, *Lampropodous scintillans*, Rainbow and Pulleine, was the most interesting form. The tarsal segments of the legs end in beautiful iridescent tufts of hair, which, under a strong light, display all the colours of the rainbow. This spider has been previously recorded from several parts of South Australia. The single representative of the Ctenizidae proved to be *Eriodon incertum*, Cambridge. This spider has its rastellum mounted on a pad, which is situated on the inner side of the falces The type specimen was found near the Swan River, West Australia. The

Theridiidae included two immature forms of our well-known poisonous spider, *Latrodectus hasseltii*, Thorell. This species has a very wide distribution, and is known to occur throughout Australia, Tasmania, New Zealand, South Pacific Islands, India, Malaysia, Papua, and Eastern Arabia. *Rebilus castaneus*, Simon, was the only mature member of the Drassidae in the collection. It is a chestnut-brown spider, dorso-ventrally compressed and well adapted for living in narrow crevices between flat stones. Simon has already recorded it from West Australia.

"The two Clubionidae were immature specimens of *Miturga gilva*, L. Koch, a species which lives under stones in open grassy situations. It is known to occur in Victoria, New South Wales, and Queensland, as well as in West Australia. The only representative of the Dysderidae was *Ariadna thyrianthina*, Simon. Spiders of this genus are remarkable in having the third pair of legs, as well as the first and second pairs, directed towards the front. They live in holes in the ground, and round the opening of the hole they spin radiating threads attached to the inner silken lining of the burrow. These threads act as trip lines for ground roving insects, and notify the spider within the burrow of the approach of its prey. The species has been previously recorded from West Australia."

Though diligent search was made in several caves, no spiders modified for life in darkness were found. Even in Dingo-Donga, the Cave of Bats, where guano, the deposits of many centuries, formed mounds on the rocky floor, blind spiders, and blind beetles, were lacking; all the species obtained had good eyesight!

CHARLES BARRETT

VISIT TO NATIONAL HERBARIUM.

A party of about 40 members attended the excursion to the National Herbarium on Saturday, May 24. After some general remarks on the history of the institution, reference was made to the extensive travels of the first Government Botanist (Baron F. von Mueller) throughout Australia. The Australian collections were then dealt with, and some notable specimens in this portion of the Herbarium were viewed, including a set of some of the first plants collected in Australia, in 1770, by Banks and Solander, and others by Robert Brown, during the years 1802-5. Both collections are in good state of preservation. A collection of plants from Petiver's Herbarium, gathered in India and North America, more than 200 years ago, and described in the *Philosophical Transactions* of the Royal Society at the beginning of the eighteenth century, was exhibited. Some attention was devoted to the library, which now contains more than 10,000 volumes.

The extra-Australian collections were next visited, and the system of arranging the collections of over 1,200,000 sheets of specimens was explained. In this portion of the building the books of historic interest are kept.

J. W. AUDAS.

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall, on Monday, July 14, 1930. The president, Mr. C. Barrett, C.M.Z.S., occupied the chair, and there were about 100 members and visitors present.

CORRESPONDENCE.

From the Sandringham and District Horticultural Society regarding the necessity of preserving native flora.

From the Victorian Advisory Council for Flora and Fauna, extending congratulations to the Club on the attainment of its jubilee.

REPORTS.

Reports of excursions were given as follow:—Geological Museum: Mr. W. S. Abraham; Agricultural School, University: Miss J. W. Raff, M.Sc., F.E.S.

ELECTION OF MEMBERS.

The following were duly elected, as ordinary members, on a show of hands: Dr. J. F. Hollow, Kew; Miss D. Eckersley, South Yarra.

GENERAL BUSINESS.

Mr. V. H. Miller, on behalf of Mr. L. L. Hodgson, asked that suggestions for excursions and offers of leadership for the syllabus now in course of preparation, be forwarded to Mr. Hodgson or the honorary secretary as soon as possible.

Miss J. W. Raff gave a few notes on the congress of the Australasian Association for the Advancement of Science, recently held in Brisbane, and thanked members for appointing her as one of the Club's representatives.

Mr. E. E. Pescott also thanked members for appointing him as a representative of the Club, and conveyed the good wishes of the Queensland Naturalists' Club.

The president referred to a publication by Miss J. A. Kenyon, entitled "The Aboriginal Word Book," and recommended it to members of the Club.

Mr. E. E. Pescott, as Director of the Jubilee Exhibition, urged members to assist, by sales of tickets, in making the Exhibition a success.

LECTURE.

Mr. F. Lewis, Chief Inspector of Fisheries and Game, read a paper on "The Future of our Fauna," which was very interesting and instructive. He exhibited pelts of opossums, showing a considerable range of colour, from the white of the albino, through shades of fawn and grey, to the almost black fur of the mountain opossums of Victoria and Tasmania. In the discussion that followed, Messrs. F. Pitcher, A. H. Mattingley, E. E. Pescott, W. H. Ingram, A. G. Brown, H. B. Williamson, A. S. Kenyon, W. S. Abraham and the president took part. A hearty vote of thanks was accorded to Mr. Lewis.

EXHIBITS.

By Mr. A. G. Brown.—Seed pods from North Queensland, and photograph of Kagu Bird, of New Caledonia.

By Miss F. Smith.—Preserved specimen of young marine turtle from North Queensland.

By Mr. E. E. Pescott.—Grooved stone axe, broken and subsequently used for a hammer, and a pounding stone; photograph of Gecko *Gymnodactylus phyllurus*, from Tambourine Mt., Queensland.

By Mr. A. Mattingley.—Venus Cup Sponge from Wilson's Promontory.

By Mr. G. Coghill.—Cultivated specimens of *Eugenia Smithii* in fruit, and *Grevillea rosmarinifolia*.

By Mr. C. J. Gabriel.—A series of marine shell, *Ericusa Sowerbyi* Kiener, from Victoria and New South Wales.

AUSTRALIAN SEAWEEDS.

Interest in seaweeds is increasing, and Mr. W. Ingram's display of specimens, collected chiefly at St. Kilda, was a feature of the Club's Jubilee Exhibition. Algae abound often where the novice might not observe them. Wherever water collects, there Algae thrive. Some forms are microscopic, others gigantic (Kelp, etc.).

A list of Algae for Port Phillip Heads and Westernport gives 418 species and 149 genera. The large and common genera are *Callithamnion, Caulpera, Dasya, Nitophyllum, Polysophonia* and *Sargassum*. The number of species described for Australia is 1250, and many more remain to be discovered, as comparatively little work has been done. R. A. Bastow published two large chart-keys in the *Pro Roy. Soc., N.S.W.*, Vol. xxxIII. These are handy for determination. Harvey's *History of Australian Seaweeds*, published 1855-1864, is still the standard work on Australian Algae. A handbook on the seaweeds of South Australia is in course of preparation by Dr. A. H. S. Lucas, of Sydney.

The collection of seaweeds in the National Herbarium of Victoria is very extensive. It consists of two sections, Australian and foreign, and includes many thousands of sheets of specimens and species. Professor Agardh, Dr. Harvey, Dr. Sonder and Dr. Lucas have done most to make the Australian Algae better known.

NATURE GLEANINGS FROM THE PRINCE'S HIGHWAY.

By L. L. HODGSON

(Read before the Field Naturalists' Club of Victoria, on May 12, 1930.)

A journey through East Gippsland and the South Coast districts of New South Wales, via the Prince's Highway, affords the nature-lover many unique opportunities for the pursuit of his or her inclinations in various branches of natural history. Attracted by the possibilities of the country en route, the writer and his wife left Melbourne early in September, 1928, Lakes Entrance being reached the same evening. About five miles from Bairnsdale the Mitchell River takes a sharp turn to the east, caused by a high bluff known as Picnic Point, and then proceeds for some miles through a narrow strip of land, the low-lying bank on either side having been gradually formed by the deposition of silt and detritus carried down by the river over a long period. While steaming across Lake King, a flock of Black Swans, *Chenopis atrata*, shepherding some scores of young cygnets, was passed; many Cormorants (of two species) and flocks of Silver Gulls, *Larus novae-hollandiae*, also being in evidence. These gulls regularly follow the steamers closely, to pick up odd scraps of food thrown overboard, and rest occasionally on the awning over the deck.

Two days were spent at Lakes Entrance, visits being paid to Jemmy's Lookout, Kalimna, North Arm and Lake Bunga. A pleasant piece of bushland surrounds Kalimna; in a small gully running down to a miniature beach on the lakeside, were found some fine specimens of Lilly Pilly, *Eugenia Smithii*, bearing clusters of purplish berries, and Sweet Pittosporum, *P. undulatum*, many of which were festooned to a considerable height with masses of Erect Clematis, *Clematis glycinoides*, the creamy star-shaped blossoms of the latter contrasting attractively with the green foliage of their hosts. A number of other plants in bloom was noted, the most prominent being Kangaroo Apple, *Solanum aviculare*, Coastal Banksia, *Banksia integrifolia;* Austral Indigo, *Indigofera australis;* Musk Daisy-bush, *Olearia argophylla;* Blanket-leaf, *Bedfordia salicina*, and Red Box, *Eucalyptus polyanthemos.* Bird life, though plentiful, was not in great variety, the Red Wattle-bird, *Anthochaera carunculata;* Flame Robin, *Petroica phoenicea;* Black Swan, White-capped Albatross, *Diomedia cauta*, and other more familiar birds attracting attention.

A trip up the North Arm by boat proved of interest, owing to the presence of a number of White-faced Herons, *Notophoyx novae-hollandiae*, and a colony of Bell Miners, *Manorina melanophrys*, whose tinkling bell-like notes came clearly across the water from the adjoining shore. At the top of the North Arm a tramline runs some miles inland through thick bush and timber to a granite quarry, and along this track the Red-browed Firetail, *Aegintha temporalis*, White-browed Scrub-wren, *Sericornis frontalis*, and Blue Wren, *Malurus cyaneus*, came under observation.

Lake Bunga lies about three miles east of Lakes Entrance, at the eastern extremity of the ninety-mile beach, and is delightfully set among well-timbered hills, with an outlet to the ocean, across which a sandbar has formed, thus damming the water back for over half a mile, the Lake varying considerably in width. A good track leads off Lake Tyers Road to this spot, through fairly dense timber, among which many Bell Miners have made their home, the bush resounding in all directions with their metallic, tinkling notes. Many other species of birds were in evidence, the more notable being Harmonious Shrike Thrush, *Colluricincla harmonica;* Red Wattle-bird, Blue Wren, Eastern Whipbird, *Psophodes olivaceus;* Crimson Rosella, *Platycercus elegans;* White-eared Honeyeater, *Meliphaga leucotis;* Bronze-winged Pigeon, *Phaps chalcoptera;* Australian Pipit, *Anthus australis;* and Gray Butcher-bird, *Cracticus torquatus.* Descending a steep slope on the west shore of the lake, a track leads through a fine grove of Coastal Banksias, *B. integrifolia*, to the ocean beach. This grove proved to be a snake infested area, several large black snakes being seen gliding across the path. Among the flowering plants appearing hereabouts were Common Heath, *Epacris impressa;* Tasman Flax-lily, *Dianella tasmanica;* Dusky Coral-pea, *Kennedya rubicunda;* Purple Coral-pea, *Hardenbergia monophylla;* Lilly Pilly in berry, Austral Indigo, Sallow Acacia, *Acacia longifolia;* Spreading Acacia, *A. diffusa*, and Golden Tip, *Goodia lotifolia.* A number of young plants of the Saw Banksia, *Banksia serrata*, was also noted.

Another attractive point of interest is Hazel Walk, on the north bank of the North Arm. The shore is steep and thickly clothed with a mass of varied vegetation, including two species of Daisy Bush, *Olearia*, and tresses of Wonga Vine, *Tecoma australis*, draping the branches of the larger shrubs and trees. Common Correa, *Correa rubra*, was also fairly plentiful in the more open parts. Dodder Laurel, *Cassytha glabella*, had secured a firm hold on many of the trees and bushes.

From Lakes Entrance, we journeyed to Mallacoota. Passing Nowa Nowa, at the head of the long arm of Lake Tyers, through well-timbered country, we reached the Snowy River, a wide stream meandering sluggishly through the famous rich flats of the Orbost district. Shortly after leaving Orbost the Brodribb River is crossed, and the well-graded road pursues a tortuous course through the Orbost Forest to the attractive Euchre Creek Valley, where it follows the stream for about seven miles. Among the tall growths in this valley we noticed, in passing, several specimens of Gippsland Waratah, *Telopea oreades*. We next passed Bellbird, a tiny hamlet on the banks of a pretty creek, famed for its great variety of ferns, and thence on to the Cann River, through ever-varying bush and forest land.

The country is moderately timbered, and many species of native flora furnished bright patches of colour among the trees and shrubby growth; especially noticeable were both red and white varieties of Common Heath, Purple Coral-pea, Pink-eye, *Tetratheca ciliata*, Austral Indigo, Dusky Coral-pea, and Sallow Acacia, while of lesser note were Common Correa, *Correa rubra*, var. *virens*, Common Beard-heath, *Leucopogon virgatus*, Dusty Miller, *Spyridium parvifolium*, and Saw Banksia. On rejoining the car, we were whirled around the densely clothed slopes of Mt. Drummer, much too rapidly for adequate appreciation of the many glorious vistas of deep valleys and gullies, or for close examination of the varied nature of the jungle growth, the home of the Lyre-bird, *Menura victoriae*, and of numerous Kangaroos, Wallabies and Dingoes. An arresting feature on these slopes was the tangled masses of Erect Clematis festooning the big shrubs and trees up to a height of 40 or 50 feet. Leaving Mt. Drummer, a comparatively level stretch of road leads to Genoa, on approaching which a small brood of young Black Duck, *Anas superciliosa*, was sighted running across the road.

The Mallacoota road turns off at Genoa, and follows the Genoa River for a mile or two. At about five miles, a delightful vista of the north-western arm of the lake is glimpsed, before the road again diverges into attractive bush country. A mob of some eight or ten Kangaroos, disturbed by the sudden appearance of the car, was discernable in the dusk as they crashed through the scrub. Portions of the road were fringed with a profuse growth of what appeared to be a species of Kunzea, probably *K. peduncularis*, while white and red Heath was very plentiful.

During our two days' sojourn, several excursions were made into the surrounding country. A short walk from our headquarters (Mallacoota House) on the western shore of the inlet, brought us to Mallacoota West township. The track traverses a delightful gully, a prominent feature of the vegetation being many large specimens of the Bracelet Tea-tree, *Melaleuca armillaris*, up to 40 feet in height. This species is confined, in Victoria, to the extreme east of the State, though of frequent occurrence in the southern coastal regions of New South Wales. Numerous birds enlivened the bush with flight and song, some 20 species being identified, including the King Parrot, *Aprosmictus scapularis;* the Scarlet and Yellow Robins, *Petroica multicolor* and *Eopsaltria australis;* White-eared Honeyeater, Blue Wren, Fantailed Cuckoo, *Cacomantis fla-*

belliformis, and Magpie Lark, *Grallina cyanoleuca*, besides more common varieties, such as White-backed Magpies, *Gymnorhina hypoleuca;* Kookaburra, *Dacelo gigas;* Harmonious Shrike Thrush, Gray Fantail, *Rhipidura flabellifera;* Black and White Fantail, *R. leucophrys*, and others.

A ramble over the heath-lands near the ocean beach resulted in some thirty species of flowering native plants being listed, of which Pinkeye, *Tetratheca ciliata;* Blue Dampiera, *Dampiera stricta;* Purple Eyebright, *Euphrasia collina;* Blue Squill, *Chamaescilla corymbosa;* Large-leaf Bush-pea, *Pulteneae daphnoides;* Purple-flag, *Patersonia* sp., and Heathy Parrot Pea, *Dillwynia ericifolia*, were prominent. Three species of Orchids were also found—Wax-lip Orchid, *Glossodia major;* Leopard Orchid, *Diuris maculata*, and Tiger Orchid, *D. sulphurea*. Some aboriginal kitchen middens were visible near the shores of the inlet, but little time was available for investigating them, and nothing of interest was discovered. I was, however, informed that skeletons and native implements have been unearthed from time to time.

Mallacoota is an ideal place in which to spend a vacation, the inlet being delightfully located in the midst of hills, around the timbered slopes of which numerous arms and bays extend, the whole effect being very picturesque with the Nadji Ranges looming in the background.

After our all too brief stay, our journey was continued to Eden, 35 miles across the border in New South Wales, where we spent the night. The township is situated on a bare hill overlooking Twofold Bay, the shores of which, in common with most of the surrounding country, are well timbered. The southern section of Twofold Bay, with the solitary peak of Mt. Imlay limned on the distant skyline, made a charming picture.

The district is of considerable historical interest. The remains of the old settlement at Boydtown, on the southern shores of Twofold Bay, recall the romantic career of Ben Boyd, who arrived in Sydney from London in the early forties as the representative of a group of Scottish financiers. Having acquired pastoral interests in the Monaro country, he saw that Twofold Bay would afford an outlet therefor, and established Boydtown, where he erected a Gothic church, a fine hotel, rows of brick stores and houses, cottages and a jetty. He also constructed 45 miles of road to connect with the Monaro country, and erected a lighthouse 126 ft. high and 22 ft. in diameter, in which, however, he was not permitted by the Government to instal a light. He later established a whaling station and installed a fleet of nine whaling ships. This industry has, in recent years, been revived, and Twofold Bay is frequently the scene of whaling activities, the "spouting" of a whale in the bay being one of the unique sights of this interesting locality. The ruins of the Gothic church and other old buildings may still be seen, and the remains of the lighthouse are still standing at South Head, Eden.

The next stage brought us to Bega, after passing through Pambula, Merimbula and Wolumla, localities famous for the culture of oysters, which are spawned and raised in the extensive shallow salt water inlets running in from the coast. Bega, the centre of a prosperous dairying district, is a large, well-laid out town amid attractive undulating country, on which a fair proportion of the original timber has been left for shelter purposes, and which is watered by the Bega River and tributary creeks. The courses of the streams throughout this part of the country are well defined by the River She-oke, *Casuarina Cunninghamiana*, which lines the banks almost at the water's edge, and appears to be restricted to such moist positions.

The beautiful Brogo Pass is a scenic revelation, the road clinging to the side of a steep mountain slope, and following the course of the Casuarina-lined Brogo River, which rushes over its rock-strewn bed just below. Unfortunately, opportunity did not occur for an examination of the wealth of varied vegetation which luxuriates in this region. Our route wound around the slopes of the somewhat mountainous country, which we had now entered, and, after touching at Bermagui, a resort on the coast, we continued through Tilba Tilba and other villages until we reached Narooma. Near Tilba Tilba, we observed a big outcrop of rocks, practically covered with the well-known Rock Orchid, *Dendrobium speciosum*, the sweet scent of which was gently wafted to us.

Several distinctive features of this section of country were of much interest. The prevalence of Illawarra Flame Trees, *Brachychiton acerifolium*, a number of which was growing around almost every cottage and farmhouse throughout the district, drew our attention, their covering of scarlet blooms, which appear before the leaves open, being an arresting sight. Illimitable numbers of Burrawong Palms, *Macrozamia*, of several species appeared in dense masses in the uncleared areas of forest land, the principal timber of which was the Spotted Gum, *Eucalyptus maculata*. The prolific growth of these two types of plant, diversified at intervals with clumps of tall Cabbage Palms, *Livistona australis*—tufts of fronds at the summit of bare stems—was a dominating feature of the scenery for some 200 miles or so along the coastal region.

Narooma proved a most interesting locality for the student of nature. It is attractively situated at the mouth of the Wagonga River, a stream with a very narrow outlet, which has caused the river to widen very considerably and form an extensive lake, broken on each side by timbered knolls and tongues of land, between which are many charming little bays. Adjacent to the township are some large areas of virgin bush-land, which literally teem with bird-life. Eastern Whipbirds could be heard calling all around, and we were enabled by remaining motionless or moving cautiously, to observe a number of these birds feeding and calling. They feed on the ground, scratching among the dead leaves and other debris somewhat after the manner of the Lyrebird. The principal call is given by the male bird, and immediately after the terminating whip-note, the female responds with two quick, short notes. Frequently, however no answering call is emitted by the hen-bird, her mate alone being responsible for the long-drawn note ending with the whip-like crack. Many other species of birds were in evidence, notably the Golden Whistler, *Pachycephala pectoralis*, Red-browed Firetail, Fantailed Cuckoo, Pied Currawong, *Strepera graculina*, Dusky Wood-Swallow, *Artamus cyanopterus*, and Harmonious Shrike Thrush. Several species of Honeyeaters flitted about among the bushes and trees, their clear singing notes being very pleasing. These included the Yellow-faced, *Meliphaga chrysops;* Singing, *M. virescens;* White-cheeked, *Meliornis niger;* and Scarlet Honeyeaters, *Myzomela sanguinolenta.* Flying agitatedly among the tops of some clumps of Eucalypts adjoining the township were flocks of Rainbow Lorikeets, *Trichoglossus moluccanus*, their harsh screeching being out of harmony with the beauty of their colouration.

Several species of plants were in bloom, but were mostly similar to those already recorded. In the upper reaches of the river were some large clumps of White Mangrove, *Avicennia officinalis*, growing on submerged mud-banks.

After spending three very interesting days at Narooma, we proceeded to Moruya, where we stayed over night, and early next morning the final stage of our journey to Sydney was commenced. Passing through Milton, Nowra (a large town on the Shoalhaven River) and Wollongong (an important coastal town), we reached the famous Bulli Pass in mid-afternoon, and enjoyed the glorious panorama from the top of the Pass, embracing the coastline with its numerous sandy bays and foaming surf for many miles to north and south, and overlooking the villages and towns nestling far beneath us at the foot of the precipitous range.

The surroundings of the Harbour City are of such an unique and diversified character that they appear almost inexhaustible in the interest afforded to the lover of the out-of-doors.

Church Point lies at the head of a long arm of Pittwater, and is very picturesque. On the slopes and in the gullies we gathered many species of wildflowers, notably the beautiful pink *Boronia floribunda*, the Toothed Nightshade, *Solanum xanthocarpum*, with its prickly stem and foliage; the Snake Vine, *Hibbertia volubilis*.

a climbing undershrub bearing large yellow flowers; Heath Pinkeye, *Tetratheca ericifolia*, having its leaves in whorls of four; Heath Milkwort, *Bredemeyera ericinum;* Hairy Fanflower, *Scaevola ramosissima*, producing purple blossoms on a long hairy stem, and the dainty little Ivy-leaf Violet, *Viola hederacea*. Numbers of young Cabbage Palms were flourishing in the small gullies of this region.

Palm Beach is situated on the ocean front immediately adjacent to Barrenjoey, the south headland of the entrance to Broken Bay, into which flows the Hawkesbury River. A splendid surf beach extends in a curve for about a mile, and is backed by well-timbered hills dotted with many attractive homes. Among the rocks and timber on the steep hill-slopes, the beautiful Flannel-Flower, *Actinotis helianthi*, was growing profusely, specimens also being obtained of the Little Fannel Flower, *Actinotis minor*, a somewhat diminutive relative of the first-named species. Following the coast along the heights for some miles, we passed Whale Bay, with foam-flecked breakers surging on its sandy shore, before descending to the main road. Hereabouts our collection of native flora was enriched by the striking red Honey Flower, *Lambertia formosa*, displaying its clusters of tubular flowers surrounded by numerous silky bracts. We also gathered the Crimson Bottlebrush, *Callistemon citrinus*, the small-leaved Coral Heath, *Epacris microphylla*, the curious Grey Spider-flower and Red Spider-flower, *Grevillea buxifolia* and *G. punicea*, also *Grevillea acanthifolia*, with its spiny Acanthus-like foliage and red blossoms; the Tall Cone-bush, *Isopogon anemonifolius*, known locally as "Drumsticks," to which the flower-heads bear a striking resemblance; *Kunzea capitata*, bearing small terminal inflorescences of a purplish colour; Wedding Bush, *Ricinocarpus pinifolius;* Swamp Heath, *Sprengelia incarnata;* Spreading Flax Lily, *Dianella revoluta*, and the Tufted Lily, *Stypandra caespitosa*, producing numerous bright blue star-like flowers on a slender stem. A fine clump of Cabbage Palms was passed in a low-lying patch of ground at Bilgola Beach, near Newport. The Proteaceous plants, as exemplified by the Grevilleas, Callistemons, Lambertias, and Isopogons form a distinctive feature of the flora in this district.

During our stay at Sydney, the opportunity was taken to visit the Blue Mountains. Alighting at Wentworth Falls Station, a mile walk brought us to the reserve at the head of the Falls, whence extensive views are revealed of the thickly-timbered Jamieson Valley below, and range upon range of rugged mountains stretching to the horizon, their scarred peaks and undulating ridges clearly etched against the distant sky-line. After visiting the Weeping Rock and Cascades, we descended the stairs which have been cut out of the solid rock of the cliff-face, and which afford vantage points for varied aspects of the Wentworth Falls. On reaching the foot of the Falls we proceeded along the wonderful National Pass, a foot track which has been excavated for considerable sections of its course, from the face of the overhanging sandstone cliff, and which discloses splendid vistas of the Jamieson Valley and enclosing ranges. In about two miles, the Valley of the Waters was reached, wherein is a rapid succession of fern-embowered waterfalls, overhung with the luxuriant growth of gully vegetation, and exquisitely fringed with a profusion of mosses and small ferns—a sylvan scene of entrancing beauty.

Passing over a deep, narrow canyon, the track leads up to the summit of the cliff, the soil being of a poor hungry looking character, but supporting a moderate growth of native plants. It was here that the Waratah, *Telopea speciosissima*, was found in bloom, though the plants were somewhat stunted and straggly.

The following day we essayed the trip from Leura to Katoomba, via the Federal Pass. The track follows a stream down a steep gully by a series of steps and stairs, to the Leura or "Bridal Veil" Falls, which, though not so imposing as the Wentworth Falls, have their own distinctive charm. The Pass leads through forest containing many tree ferns, and numerous specimens of Cedar Wattle, *Acacia terminalis*. Gurgling beneath the profusion of forest verdure, a succession of crystal-clear brooks tumble down their steep rocky beds, before the route brings one to the base of the Three Sisters, a row of jagged rock columns forming portion of a small spur jutting from the tableland above.

Continuing along the Pass, which now followed and occasionaly crossed a stream almost hidden beneath a canopy of luscious greenery, we eventually came into sight of the Katoomba Falls, a narrow band of water falling abruptly from the edge of the cliff which has, at this spot, gradually eroded until a vast amphitheatre has been formed. The impact of the falling stream on a massive boulder has a spectacular effect; the water, dashed into a thousand jets of spray, is dispersed over a considerable area, the congenial environment maintaining the surrounding flora in a luxuriant condition. Behind the Falls is a large natural grotto, in which many varieties of small ferns and mosses are clinging to the wall-crevices, and thriving in these perenially moist positions.

Leaving this delightful scene, the track continues on. After passing beneath the lonely Orphan Rock, and ascending several hundred steps, we eventually emerged on the top of the cliff, whence a short walk brought us to the thriving town of Katoomba.

Several other short excursions were made to localities around Sydney, notaby to Lindfield and Davidson Parks, adjoining the famous Kuring-gai Chase, during which various specimens of native plants were found in bloom. These comprised the dainty red and white Fuchsia Heath, *Epacris longiflora*, Wiry Bauera, *Bauera* *rubioides*, the beautiful pink flowering *Crowea saligna*, somewhat resembling a large Boronia; the handsome Golden Pea-bush, *Gompholobium latifolium*, covered with yellow pea-shaped blooms; the Large-leaf Bush-pea and Rigid Bush-pea, *Pultenaea daphnoides* and *P. stricta*, also *P. stipularis*, with numerous long, scaly stipules hiding the stem; Heathy Parrot-pea, *Dillwynia ericifolia;* the spiny-leaved Gorse Bitter-pea, *Daviesia ulicina;* Handsome Flat-pea, *Platylobium formosum;* the so-called " Red Bean," *Kennedya rubicunda;* Slender Riceflower, *Pimelea linifolia;* Sunshine Wattle, *Acacia botrycephala* (discolor); Purple Lobelia, *Lobelia purpurescens;* the Swamp and Pinnate Boronias, *Boronia parviflora* and *B. pinnata*, with the dainty *Boronia ledifolia;* also the Grey Spider-flower, *Grevillea buxifolia*, in association with *Grevillea acanthifolia* and the narrow-leaved *Grevillea linearis;* and last, but far from least, the large Flannel Flower, *Actinotis helianthi*. The dominant note of the flora in this area is the prevalence and variety of the Leguminosae.

SOME FACTS ABOUT FOSSILS.

Fossils shown by Mr. F. Chapman, A.L.S., and others at the Club's Jubilee Exhibition attracted much attention. Many questions were asked by visitors. Following are notes, supplied by Mr. Chapman, giving an idea of what the fossils represent:—

Delicately tinted shell limestone, probably of the Raised Beach period, as used at Carnarvon, N.W. Australia, for the erection of houses. The shells are mainly of one genus, a small species of *Cardium*.

Some of the Tertiary beds of Carnarvon are largely made up of the tests of Biscuit Urchins. They are of some antiquity, perhaps a million years, but are like those living at the present day.

When the River Murray dries up, at certain seasons, various bones of extinct marsupials are brought to light, and an example was shown in the fore-part of the jaw of the extinct giant *Nototherium*, found by W. D. Chapman, at Robin Vale, during the construction of the railway. This marsupial was more enterprising than the *Diprotodon*, for it eventually reached Tasmania.

Pipe-clay beds in Victoria often represent the remains of old lakes, and it is fascinating work to delve in these in order to find the remains of fossil Eucalypt leaves and others. One of them was named, many years ago, after Sir Albert Kitson, while he was on the Victorian survey. Lake beds of a similar Tertiary age were recently investigated by members of the Science Congress, when they visited Brisbane. One of those exhibited shows a wonderful Banksia leaf with all the minute veins as clear as in a skeleton leaf of the present day, though as old as two or three million years.

From the Trias (40,000,000 years) of Newtown, Hobart, are the curious plants called Horsetails. These are now extinct in the Southern Hemisphere, but are common in America and Europe. In England the feathery growths of the Equisetum are often seen in the hedgerows—veritable living fossils.

Sea-beds covered with shells of *Productus* and *Strophalosia* (Lamp-shells) are found in the old Permo-carboniferous rocks, in the district of Bridgewater, Tasmania. It is about 50,000,000 years since the water ran off and left them high and dry. Spirifers and ancient Pectens, of similar age, from Tasmania, are to be seen, and some of these marine shells of the Pecten kind can at times be found washed into the kerosene shale of the Mersey River series. The shale is supposed to have been formed in lakes, so that in this case the shore-line could not have been far off.

The old sea-bed of Zeehan, Tasmania, has an antiquity of about 60,000,000 years, and the quaint kinds of shells, mainly lamp-shells, show how old they are.

Kinglake, Victoria, is a happy hunting ground for the fossil collector. Trilobites from the district belong to a genus which is found as widely spread as North America, England and South Africa.

Among the oldest fossils in Australia may be counted the Trilobites (*Redlichia*) and the Sea-butterflies (*Salterella*) of North-west Australia, and the curious cup-like sponge-corals, the Archaeocyathinae, of South Australia. The sea-beds in which they occur are often horizontal, and seem never to have been disturbed from the earliest times.

"WINTERING" SWALLOWS IN GIPPSLAND.

Is it so very unusual for a pair of Welcome Swallows, *Hirundo neoxena*, to stay all the winter in Gippsland? I do not remember a year when there has not been a pair of Swallows with us. On two or three occasions, when we had several days of severe frost, the small birds would creep between the battens and the corrugated iron, and in the morning be stuck fast to the iron with frost! They released themselves forcibly, with a loss of feathers. This happened on several mornings in succession during the last week of June, 1929, when we had ten frosts. The "lost" feathers stayed on the iron for some weeks, the warmth of the sun not being strong enough to thaw them off. I wondered why the Swallows did not learn to use the rafters that were further from the iron. Only one pair remain, though a great many gather before the "flitting." There are also two pairs that each nest under a culvert or bridge, which take a flood each season. Perhaps the stringers of the culvert are high enough to protect the nests.—C. C. C., Lardner, Victoria.

Excursion Syllabus.—Offers of leadership are invited from members for the excursion syllabus for the year 1930-31, which is now in course of preparation. Please communicate with the honorary secretary or Mr. L. L. Hodgson.

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THE FIELD NATURALISTS' CLUB OF VICTORIA.

The ordinary monthly meeting of the Club was held in the Royal Society's Hall, on Monday, August 11, 1930. The president, Mr. C. Barrett, C.M.Z.S., occupied the chair, and there were about 130 members and visitors present.

CORRESPONDENCE.

From the Royal Horticultural Society of Victoria, enclosing programme of meetings and lectures.

From the Victorian Government Tourist Bureau, with full details of a proposed Nature Study Camp in the Grampians in September.

REPORTS.

Reports of excursions were given as follow:—National Museum (conducted by Mr. F. A. Cudmore); Mr. P. R. H. St. John; Sherbrooke Gully: Mr. A. G. Hooke.

ELECTION OF MEMBERS.

The following were duly elected on a show of hands:—As an ordinary member: Miss Jean Sutherland, Caulfield; as a country member: Mr. L. Mooney, Ararat.

GENERAL BUSINESS.

Mr. E. E. Pescott, F.L.S., as honorary director of the recent Jubilee Commemoration of the Club, gave a preliminary report on the Jubilee Dinner and Exhibition of Natural History, and stated that these functions were very successful, both financially and otherwise.

The president informed members that a notice of motion had been made in committee by Mr. E. E. Pescott, F.L.S., that an Endowment Fund be established for the benefit of the Club.

A welcome was extended to Mr. C. E. Clayden, a country member from New Zealand.

Mr. D. H. Fleay showed a fine series of photographic lantern slides, and gave very interesting information concerning numerous species of Australian marsupials. A vote of thanks was accorded to him, and he was warmly congratulated on the excellence of his photographs.

EXHIBITS.

By Mr. G. Coghill.—*Grevillea rosmarinifolia*, *Thryptomene calycina*, *Tecoma australis*, *Acacia podalyrifolia*, from his garden.

By Mr. H. P. Dickins.—*Banksia collina*.

By Mr. D. J. Paton.—*Correa rubra*, var. *glabra*, "Smooth Correa," from River Yarra, Kew.

By Mr. H. P. McColl.—Three varieties of *Hardenbergia monophylla*, *Grevillea rosmarinifolia*, *Acacia longifolia*.

By Mr. F. Pitcher.—Variegated form of Lilly Pilly, *Eugenia Smithii*, in fruit, from his garden at South Yarra.

By Mr. Tarlton Rayment.—Double fruited Choko, *Sechium edule*, grown at Sandringham.

By Mr. L. W. Cooper.—Photograph of natural graft of *Eucalyptus rostrata*, growing near Broken Hill, New South Wales.

By Mr. C. J. Gabriel.—Freshwater shells, *Bullinus pyramidatus*, Sowerby, from Portland.

By Mr. S. R. Mitchell.—Flint replacing and infilling echinoid tests, Flint-quartzite conglomerate, from Stratford, England; also prehistoric hammer stones from Mona Copper Mine, Anglesea, England.

By Mr. A. E. Rodda.—Shell of bivalve, *Chamostrea albida*, attached to oyster shell, Port Phillip Bay; also Queensland orchids, from a city market.

By Mr. E. E. Pescott.—Cultivated flowers of *Thryptomene calycina;* collection of British flint artefacts.

By the Director, Mr. J. A. Kershaw, C.M.Z.S., for the National Museum.—Leadbeater Opossum, *Gymnobelideus leadbeateri;* Striped Phalanger, *Dactylopsila trivirgata;* Yellow Phalanger, *Pseudochirus archeri;* Johnston's Phalanger, *Pseudochirus johnstoni;* Common Ring-tailed Opossum, *Pseudochirus peregrinus* and young; Yellow-bellied Flying Phalanger, *Petaurus australis;* Squirrel Flying Phalanger, *Petaurus sciureus;* Lesser Flying Phalanger, *Petaurus breviceps;* Lesser Flying Phalanger, *Petaurus breviceps*, var. *papuanus;* Pigmy Flying Phalanger, *Acrobates pygmaeus*.

By Mr. T. Greaves.—Several wingless females of Braconid and Thynnid wasps; beetle, *Homaemota lactabilis*, Blk.; a hunting wasp, larvae of which, with flies upon which they were feeding, were found one foot below the surface at Ferntree Gully.

For the convenience of members, Mr. W. H. Ingram has offered to be in attendance in the lower hall from 7.30 p.m. until 8 p.m. on Club meeting nights. He will issue books from the Library.

STONE STRUCTURES OF THE AUSTRALIAN ABORIGINAL.

By A. S. Kenyon.

Despite much research and some rather circumstantial statements, no evidence has yet been discovered of megalithic remains on the Australian continent. True, it was stated in *Chambers' Miscellany*, that stone circles were to be found in the Western District of Victoria of a character, judging by illustrations, quite like Stonehenge. Some were even concentric. All this was due to a letter from Francis Ormond, senior, to Sir James Y. Simpson, wherein he stated that he had seen many stone circles up to 100 feet in diameter on the Mount Elephant Plains. Further, that the aborigines had no traditions respecting them, and invariably denied all knowledge of their origin.

It is interesting to learn that one subdivision of the Mount Elephant run was named Stonehenge. However, the most diligent search failed to reveal any of these gigantic circles.

Mr. Peter Manifold, who was a much earlier colonist than Captain Ormond, and who actually held that country—Ormond was on the Leigh River—gave a very simple explanation. The structures were shelter-circles, erected in situations where neither brushwood nor bark could be obtained for building mia-mias. "The natives there formed these break-winds of stones, placed on edge in a circular form, some of them very perfect, leaving the opening generally towards the east. These circles are common on the plains or eastern part of this property (Purrumbete), where branches of trees could not be procured for giving shelter. When we first occupied this country (1839) it was common for the natives to use these circles as camping places, always having the fires in the centre. The fires were very small, as they frequently had to carry the wood long distances. The circles are generally formed of large stones set on their edges and bedded in the ground close together, without any other stones on the top, thus forming good protection from the wind as they lay around the fire. The stones are of the common basalt, there being no other in the district. The situation selected was generally where water was convenient, or in some favourable place for game. The circles were about the size of the ordinary mia-mias, that is from ten to twenty feet in diameter."

Stone Huts.

Among the remarkable stony rises south of Lake Condah, and around Mount Eccles, Mr. Alex. Ingram, L.S., found a number of these stone circles, about the year 1898, and learnt, from one of the old natives of the Condah Mission Station, that they had been roofed over with boughs and bark like an ordinary hut. And "ordinary" does not mean something small. The Chief Protector of Aborigines, G. A. Robinson—the conciliator of the Tasmanian blacks—in making one of his lengthy and extensive tours in 1841, came upon a native village on the Great Swamp or Korning-I-Yoke, near Mt. Napier. We will let him have his say: "The natives are still the undisputed occupants, no white man having been there to dispossess them. The people who occupy this country have fixed residences. At one village were thirteen large huts. They are warm and well constructed in shape of a cupola or kraal. A strong frame of wood is first made, and the whole covered with thick turf with the grass inwards. There are several varieties. Those like a kraal are sometimes double, having two entrances; others are semi-circular; some are made with boughs and grass. And last are the temporary screens. One hut measured 10 feet in diameter by 5 feet high, and sufficiently strong for a man on horseback to ride over."

Both King and Flinders found huts with stone walls, in both instances in the north. In the north of South Australia, where there are very large, flat stones, the blacks, at times, used them for the roof as well as for walls. So much for stone huts. Like all things aboriginal, accessible material is the explanation.

George Grey discovered, in 1838, on the N.W. coast of Australia, near Hanover Bay, a number of piles of small, loose stones, so heaped together as to form a large mound. Two remarkable ones, found later, gained the honour of a drawing with dimensions. One was 22 feet 5 inches in length, 13 feet 10 inches in breadth and 4 feet 3 inches in height, and the other, 22 feet 5 inches, 16 feet, and 5 feet 10 inches respectively. They were placed due east and west, and 33 feet apart. The stones were of all sizes, from one as weighty as a strong man could lift, to the smallest pebble. The interior was composed of mould, containing many kinds of sea-shells. Grey, with a good deal of probability, considered them to be tombs.

In connection with many ceremonies, particularly of the initiation group, earthen mounds were formed. Where large stones of somewhat uniform size were readily obtainable, lines of stones were used instead. These were set out in very elaborate patterns. Chauncy describes some in the Western District, from direct observations; and others, in the Tatiara country, from hearsay. In the early days the remains of these, and of earth structures, were fairly common in the Western and Wimmera Districts. McKinlay found a remarkable one in the north of South Australia, and Professor Wood-Jones another, quite recently. The meaning of the word structure has, however, to be somewhat strained to include these.